ORDER NO. GAD8510541C1
A6

Service Manual

Radio Cassette

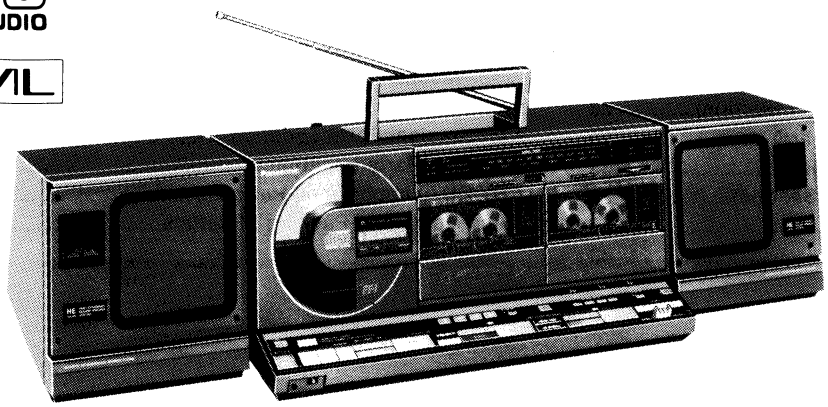
Portable Stereo Component System

RX-CD70

(Black)

COMPACT disc DIGITAL AUDIO

DIGITAL



This is the Service Manual for the following area.

M ··· For U.S.A.

■SPECIFICATIONS

General:

Power Requirement:	AC; 120V, 60Hz Battery; 15V (Ten "D" Size Flashlight Batteries) (Panasonic UM-1 or equivalent)
Power Consumption:	40W (AC only)
Power Output:	22W (11W×2)...RMS (max.)
Speaker:	Woofer; 4" (10cm) PM Dynamic Speaker (2.7Ω) Tweeter; $^{3}/_{4}$"×1$^{1}/_{2}$" (2×4cm) Ceramic Speaker (1.4kΩ)
Input:	MIC; sensitivity 0.25mV/ applicable microphone impedance 200~600Ω AUX; sensitivity 200mV/47kΩ over
Output:	Line out; sensitivity 420mV/4kΩ under Ext SP; 2.7~8Ω Headphones; 32Ω
Dimensions:	30$^{1}/_{16}$"(W)×6$^{13}/_{16}$"(H)×9$^{3}/_{8}$"(D) (764×173×237mm) Main unit; 16$^{1}/_{2}$"(W)×6$^{13}/_{16}$"(H)×9$^{3}/_{8}$"(D) (419×173×237mm) Speaker box; 7"(W)×6$^{13}/_{16}$"(H)×7$^{5}/_{16}$"(D) (177×173×186mm)
Weight:	15lbs. 7 oz (7.0kg) without batteries

Disc Player Section:

Sampling Frequency:	44.1kHz
D-A Conversion:	16-bit linear
Pickup:	FF-1 (Fine focus· 1 beam)
Light Source:	Semiconductor laser (wavelength 765nm)
No. of Channels:	2 channels, stereo
Frequency Response:	20~20,000Hz (±3dB)
Dynamic Range:	90dB (1kHz)
S/N Ratio:	90dB (1kHz)
Wow and Flutter:	below measurable limit

Radio Section:

Radio Frequency Range:	FM; 88~108MHz AM; 525~1610kHz
Intermediate Frequency:	FM; 10.7MHz AM; 525kHz
Sensitivity:	FM; 1.8μV/50mW output (−3dB limit sens.) AM; 100μV/m/50mW output

Tape Deck Section:

Frequency Response:	40~15,000Hz (with normal tape) 40~16,000Hz (with CrO_2 tape) 40~17,000Hz (with Metal tape)
Recording System:	AC bias, AC erase
Tape Speed:	1$^{7}/_{8}$ips (4.8cm/s)
Track System:	4-track 2 channel stereo recording and playback

Weights and dimensions shown are approximate.
Specifications are subject to change without notice.

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SAFETY PRECAUTIONS (For U.S.A.)

1. Before servicing, unplug the power cord to prevent an electric shock.
2. When replacing parts, use only manufacturer's recommended components for safety.
3. Check the condition of the power cord. Replace if wear or damage is evident.
4. After servicing, be sure to restore the lead dress, insulation barriers, insulation papers, sheilds, etc.
5. Before returning the serviced equipment to the customer, be sure to make the following insulation resistance test to prevent the customer from being exposed to a shock hazard.

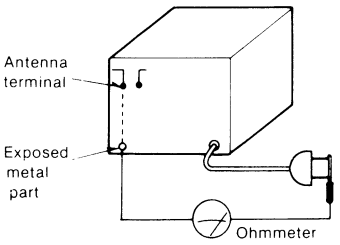


Fig. 1
Resistance = 3MΩ—5.2MΩ

INSULATION RESISTANCE TEST (For U.S.A.)

1. Unplug the power cord and short the two prongs of the plug with a jumper wire.
2. Turn on the power switch.
3. Measure the resistance value with ohmmeter between the jumpered AC plug and each exposed metal cabinet part, such as screwheads, antenna, control shafts, handle brackets, etc. Equipment with antenna terminals should read between 3MΩ and 5.2MΩ to all exposed parts*. (Fig. 1) Equipment without antenna terminals should read approximately infinity to all exposed parts. (Fig. 2)
   * **Note:** Some exposed parts may be isolated from the chassis by design. These will read infinity.
4. If the measurement is outside the specified limits, there is a possibility of a shock hazard. The equipment should be repaired and rechecked before it is returned to the customer.

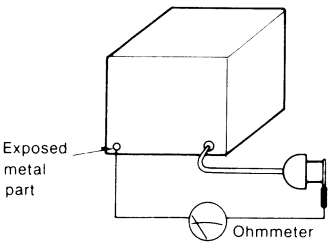
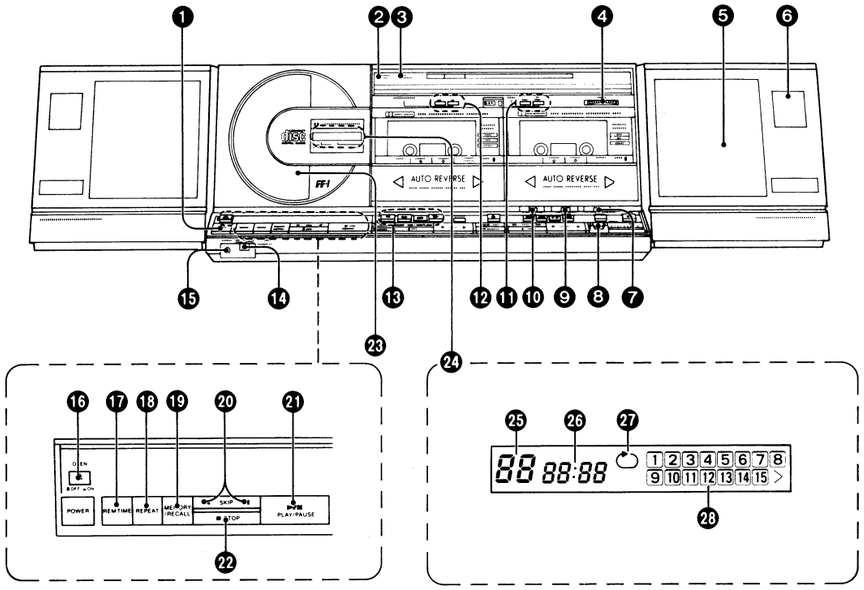


Fig. 2
Resistance = Approx ∞

CAUTION:

THIS PRODUCT UTILIZES A LASER.
USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

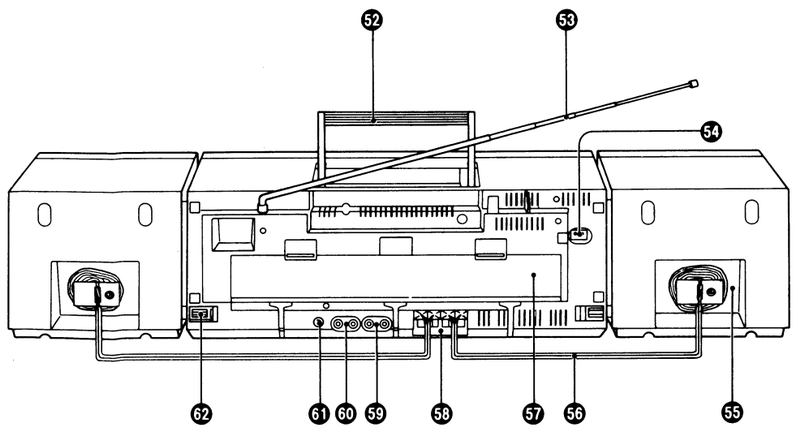
LOCATION OF CONTROLS AND COMPONENTS



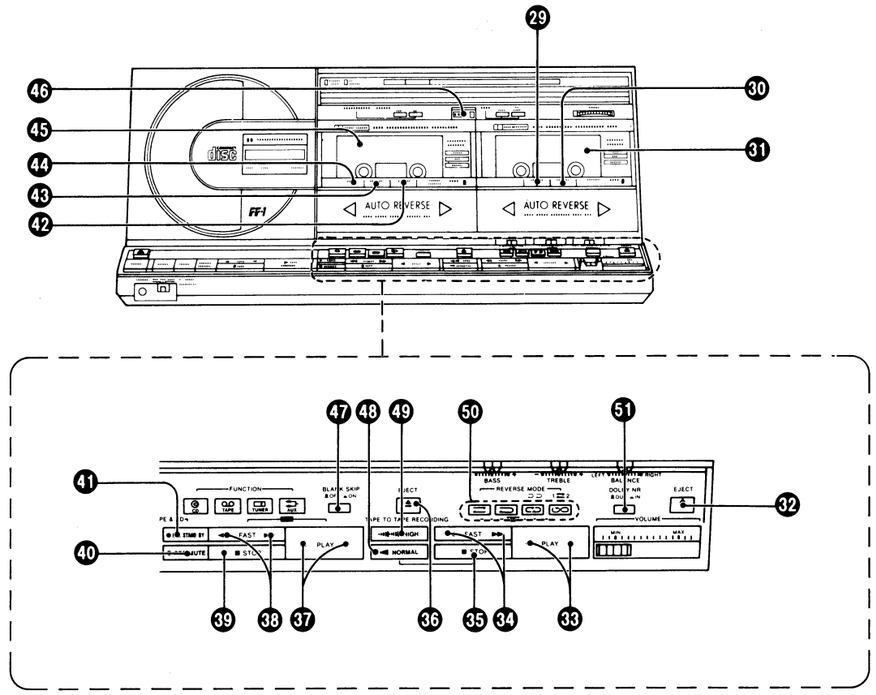
❶ Power Switch (POWER)
❷ Power/Battery Check Indicator (POWER/BATT)
❸ FM Stereo Indicator (FM STEREO)
❹ Tuning Control (TUNING)
❺ Speakers (Woofer) [10 cm/2.7 Ω]
❻ Speakers (Tweeter) [2 cm/1.4 kΩ]
❼ Balance Control (BALANCE)
❽ Volume Control (VOLUME)
❾ Treble Control (TREBLE)
❿ Bass Control (BASS)
⓫ Band Selector (BAND)
⓬ FM Mode Selector/Beat Proof Switch (FM MODE/B.P)
⓭ Function Selector (FUNCTION)
⓮ Timer Stand By Selector (TIMER STAND BY)
⓯ Headphones Jack (PHONES) [32 Ω/φ3.5]

CD CONTROLS

⓰ Open Button (OPEN)
⓱ Remaining Time Button (REM TIME)
⓲ Repeat Button (REPEAT)
⓳ Memory/Recall Button (MEMORY/RECALL)
⓴ Skip Button (⏮ • ⏭ SKIP)
㉑ Play/Pause Button (▶/⏸ PLAY/PAUSE)
㉒ Stop Button (■ STOP)
㉓ Disc Holder
㉔ Display Panel
㉕ Track Display (TRACK)
㉖ Time Display (TIME)
㉗ Repeat Indicator
㉘ Program Display (PROGRAM)



㉜ Handle
㉝ Telescopic Antenna
㉞ AC Socket (AC IN ~) [120 V/60 Hz]
㉟ Speaker Cable Compartments
㊱ Speaker Cables
㊲ Battery Compartment
㊳ Speaker Terminals (SPEAKER IMP 3–8Ω)
㊴ Line Output Jacks (LINE OUT)
㊵ Auxiliary Input Jacks (AUX IN)
㊶ External Microphone Jack (EXT MIC) [0.25 mV/φ3.5]
㊷ Speaker Release Levers (RELEASE)



TAPE 2 CONTROLS

㉙ Reverse Indicator (REVERSE)
㉚ Forward Indicator (FORWARD)
㉛ Cassette Compartment
㉜ Eject Button (EJECT)
㉝ Playback Button (◀ • ▶ PLAY)
㉞ Fast Button (◀◀ • ▶▶ FAST)
㉟ Stop Button (■ STOP)
Press to stop One Touch Tape to Tape Recording.

TAPE 1 CONTROLS

㊱ Eject Button (EJECT)
㊲ Playback Button (◀ • ▶ PLAY)
㊳ Fast Button (◀◀ • ▶▶ FAST)
㊴ Stop Button (■ STOP)
㊵ Record Muting Button (○ REC MUTE)
㊶ Record Stand By Button (● REC STAND BY)
㊷ Forward Indicator (FORWARD)
㊸ Reverse Indicator (REVERSE)
㊹ Recording Indicator (RECORD)
㊺ Cassette Compartment
㊻ Tape Counter and Reset Button

GENERAL TAPE CONTROLS

㊼ Blank Skip Switch (BLANK SKIP)
㊽ Normal Speed Button (NORMAL)
㊾ High Speed Button (HIGH)
㊿ Reverse Mode Selector (REVERSE MODE)
(51) *Dolby Noise Reduction Switch (DOLBY NR)

*"Dolby" and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.
Noise reduction system manufactured under license from Dolby Laboratories Licensing Corporation.

Note:
When pressing the Skip Button, Playback Buttons or the Fast Buttons, always press near the operating mark position. As for the other operation buttons, press the center of the buttons.

BATTERY SERVICE LIFE

UM-1 (D-size) Batteries
Approx. 7 hours of recording (EIAJ).
Approx. 4.3 hours playback (EIAJ) with volume set at "8" position.

The above battery service life is measured according to the conditions set forth by EIAJ (Electronic Industries Association of Japan). As the battery service life varies with the method of operation and environmental conditions, use these values as reference.

CONCERNING COMPACT DISCS

Observe the following precautions to enjoy the same outstanding sonic performance from your compact discs for many years.

■ Handling precautions

Only compact discs having this mark can be used with this player.

COMPACT disc DIGITAL AUDIO

- Hold compact discs by the edges so the surface is not soiled with fingerprints.
- Be careful not to scratch the surface with fingernails or other sharp objects, particularly when inserting and removing discs from their cases.
- Do not bend the disc.
- Do not use record cleaning sprays or static electricity prevention liquids.
- Do not wipe with benzine, thinner or any other solvent. If the surface is soiled, wipe gently with a soft, damp (water only) cloth.
- When wiping discs, always move the cloth directly outward from the center of the disc, not in a circular motion as with standard photograph records.

OK NO

(In Compact Discs, circular scratches along a line of pits are more likely to cause errors than straight scratches across many lines of pits.)

- If the disc is brought from a cold environment into a warm room, dew may form on the disc. Wipe this off with a soft, dry cloth before using the disc.
- Do not try to dry discs with a hair dryer.
- Do not write on the label side with a ball-point pen, hard pencil or other writing utensil.

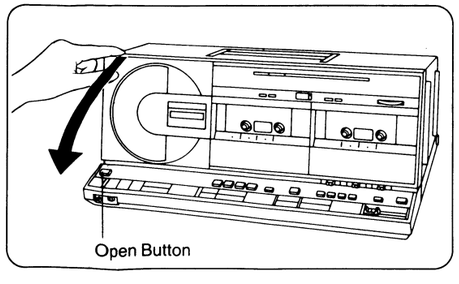
■ Storage precautions

- Be sure to store discs in their cases to protect them from dust, scratches and warping.
- Do not place or store discs in the following places:

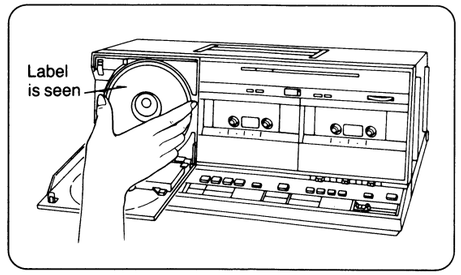
1. Locations exposed to direct sunlight.
2. Locations with high humdity or a lot of dust.
3. Locations directly exposed to a heat outlet or heating appliance.
4. In the glove compartment or rear ledge of an automobile.

DISC INSERTION

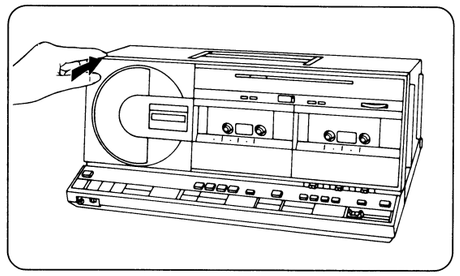
1. Press the Open Button to release the Disc Holder cover and open it as shown.



2. Insert a disc in to the Disc Holder.



3. Close the cover and push in firmly as shown.

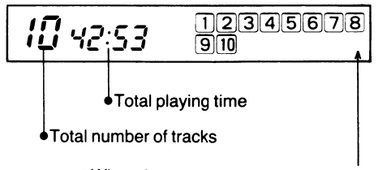


PLAYING A DISC

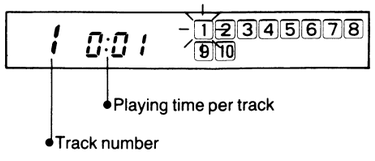
The following explanation is for a disc containing 10 tracks having a total playing time of 42 minutes and 53 seconds.

■ To Play A Disc from Beginning to End (Auto-play)

1. Turn the Power Switch to "ON".
   - The Power/Battery Check Indicator will light.
2. Press the CD Button (Function).
3. Press the Open Button and insert a disc.
   - When the Disc Holder cover is closed, the disc will rotate and the total number of tracks and the total playing time will appear on the Display Panel.


10 42:53
1 2 3 4 5 6 7 8
9 10
Total playing time
Total number of tracks
When there are more than 15 tracks on the disc, the " > " mark will be displayed.

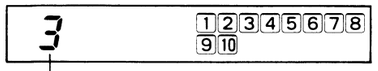
4. Press the Play/Pause Button.
   - The disc will be played from the first track.
   - The number or the track being played will flash, and go out at the end of play.



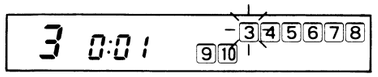
5. Adjust the Volume Control.
6. Adjust the Bass, Treble, and Balance Controls.
7. To stop disc play, press the Stop Button.
   - The disc will stop rotating, and the total number of tracks and the total playing time will be displayed once again on the Display Panel.
   - When all tracks have been played, the disc will automatically stop.
8. Turn the Power Switch to "OFF" to turn the unit off.

■ To Play A Disc from A Specific Track (Direct-Play)

1. Follow the procedure described in steps 1–3 of "To Play A Disc from Beginning to End (Auto-Play)".
2. Press the ⏭ Button (SKIP) to locate the desired track.
   - Each time you press this button, the pickup will advance by one track. If you go past the desired track, return the pickup using the ⏮ Button.



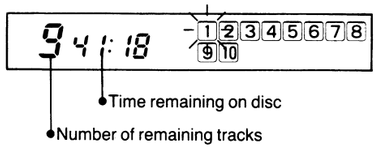
3. When you press the Play/Pause Button, disc play will start from the track 3.



4. Follow the procedure described in steps 5–8 of "To Play A Disc from Beginning to End (Auto-play)".

■ Remaining Time Display (REM TIME)

If the Remaining Time Button is pressed during Auto-play or Direct-play, the number of remaining tracks and also the remaining time on the disc will be displayed.
Press the button again to restore the initial display.



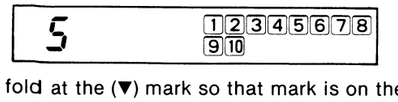
Note:
The Remaining Time Button will not function during Program-play.

■ To Play Several Tracks out of Order (Program-play)

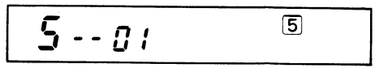
1. Follow the procedure described in steps 1–3 of "To Play Disc from Beginning to End (Auto-play)" on page 5.
2. Program several tracks out of order.
   (A maximum of 15 tracks can be programed).

For example, to play track 5, track 2, track 9 in that order...

① Press the Skip Button (⏮ or ⏭) and specify the desired track.

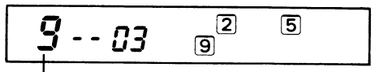


② Press the Memory/Recall Button.

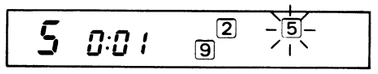


- If the Memory/Recall Button is pressed repeatedly, the same track is programed repeatedly.

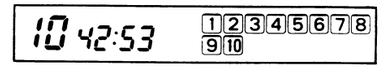
③ Repeat procedure ① and ② according to your program.



3. Press the Play/Pause Button.
   - The disc played from the first Program track.

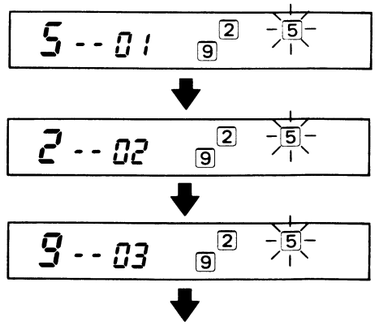


4. Adjust the Volume Control.
5. Adjust the Bass, Treble, Balance Controls.
6. To stop disc play, press the Stop Button.
   - When all programed tracks have been played, the disc will automatically stop.
   - When the Stop Button is pressed (or the disc is stopped automatically), the program will be cleared.



•To confirm the program (RECALL)

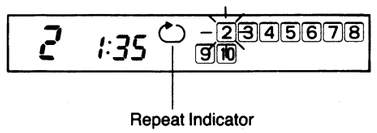
By pressing the Memory/Recall Button during Program-play or when the Program-play is paused, you can easily recall the program.



▼ Be sure to fold at the (▼) mark so that mark is on the outside.

■ Repeat Play

If the Repeat Button is pressed before or during disc play, the Repeat Indicator will appear, and the disc will be played repeatedly.
Pressing this button again will cancel the repeat function.



- During Auto-play or Direct-play, at the end of the last track the pickup will return to the first track and all tracks will be played again.
- During Program-play, only the memorized tracks will be played again in the memorized sequence.

■ Search Function

If the ▶▌Button (or ▐◀ Button) is pressed continuously during disc play, sound from the disc can be heard as the pickup moves at high speed in the forward (reverse) direction (the output level at this time is ¼ of the level during normal play). Release the button when the pickup reaches the desired portion of the disc.

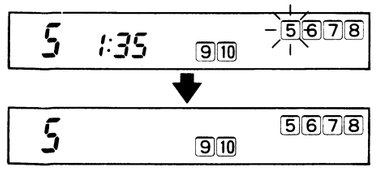
Notes:
- During Program-play, you can only search the track being played.
- If you release the button immediately, the unit will go into the Skip Play.

■ Skip Play

By pressing the Skip Button (▐◀ or ▶▌) during disc play or when disc play is paused, you can easily move the pickup to the beginning of the track being played or a track before or after it.

•When you wish to listen from the beginning of the track being played...

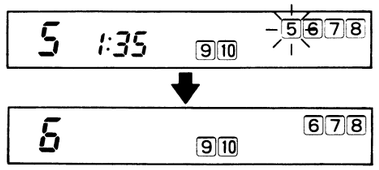
Press the ▐◀ Button once.



If you press the ▐◀ Button while track 5 is being played, the disc will be played from the beginning of track 5.

•When you wish to skip the track being played and listen to the next track...

Press the ▶▌ Button once.



If you press the ▶▌ Button when track 5 is being played, the disc will be played from the beginning of track 6.

•When you wish to skip several tracks in either the forward or backward direction...

Press and press the ▐◀ Button or the ▶▌ Button continuously, and you can skip to the beginning of the desired track. (Verify the track number by observing the Track Display on the Display Panel.)

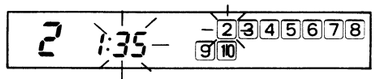
•During Program-play...

If the ▶▌ Button is pressed during Program-play, the disc will be played from the beginning of the next memorized track. Press this button to step through to a desired memorized track.

If the ▐◀ Button is pressed once during disc play, the program will be played once again from the beginning track which was being played. Press this button to step back to a desired memorized track.

■ Pause Function

If the Play/Pause Button is pressed while a disc is being played, disc play will stop.



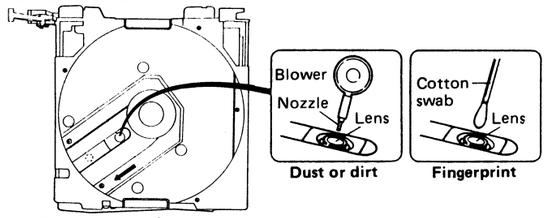
- When this button is pressed once again, disc play will continue from where it stopped.

■ CLEANING OF LENS

If the lens is stained causing sound skip or operation failure, open the top cover by pressing the open button, and clean the lens.

• To remove dust or dirt

Blow the lens with the blower provided in the cleaning kit to remove dust or dirt.

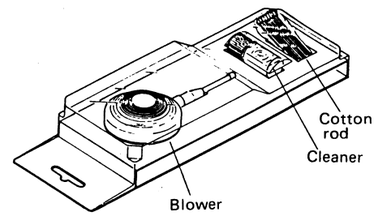


• To remove fingerprint

If the blower is not enouth, moisten the cotton swab with with the lens cleaner solution and wipe the lens with it from center of the lens to outside.

Cautions:
- Do not directly apply the cleaner solution to the lens.
- Do not apply too much solution to the cotton swab or otherwise the solution will flow into the player.
- Wipe the lens carefully. Do not put too much stress on the lens otherwise it may scratch the lens or cause optical pickup trouble.
- If too much solution is applied, wipe the lens with a dry cotton swab.

Lens cleaning kit (Part No. : SZZP1038C)

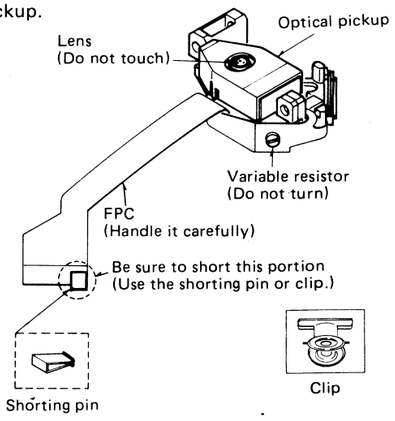


■ HANDLING PRECAUTIONS FOR OPTICAL PICKUP

The laser diode in the optical pickup may break down due to potential difference caused by static electricity of clothes or human body.
So, be careful of electrostatic breakdown during repair of the optical pickup.

• Handling of optical pickup

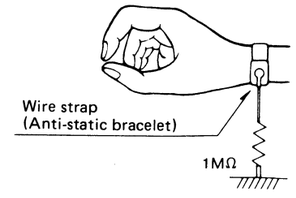
1. Do not give excessive shock to the optical pickup because it is of extremely high precision construction.
2. To prevent the breakdown of the laser diode, an anti-static shorting pin is inserted into the FPC.
   When removing or connecting the short pin, finish the job in a short time.
3. Take care not to give excessive stress to the FPC.
4. Do not turn the variable resistor (laser power adjustment). (It has been already adjusted.)

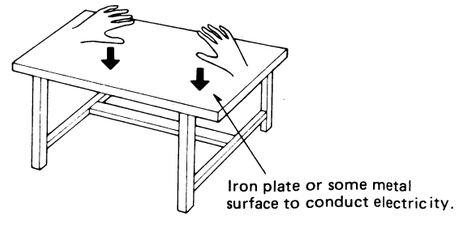


• Grounding for electrostatic breakdown prevention

1. Human body grounding
   Use the anti-static wrist strap to relieve the static electricity from your body.
2. Work table grounding
   Put a conductive material (sheet) or steel sheet on the area where the optical pickup is placed, and ground the sheet.

Caution:
The static electricity of your clothes will not be grounded through the wirst strap. So, take care not to let your clothes touch the optical pickup.





DISASSEMBLY INSTRUCTIONS

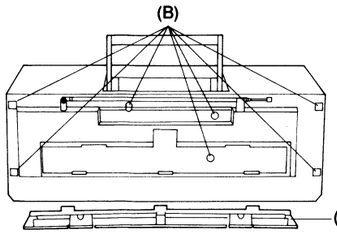


Fig. 1

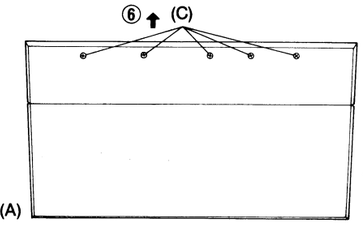


Fig. 2

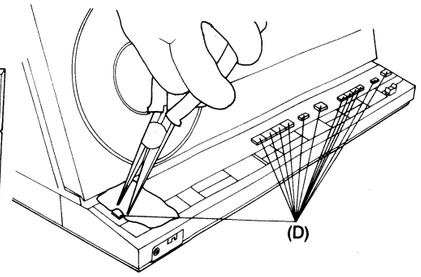


Fig. 3

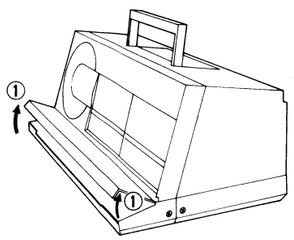


Fig. 4

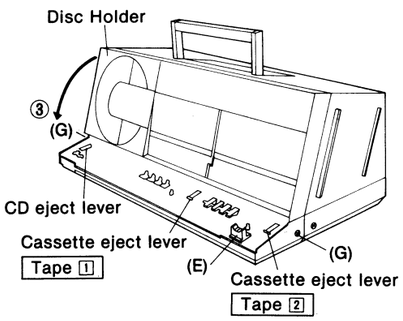


Fig. 5

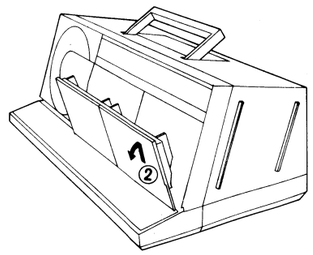


Fig. 6

Ref. No.	Shown in Fig. —.	To remove —.	Remove —.
1	1	Front Cabinet (*1)	Battery cover ..... (A)×1
2	1		Screw (3×60)mm ..... (B)×7
3	2		Screw (3×16)mm ..... (C)×5
4	3		Pull out the operating buttons with a cloth so as not to scratch them. ..... (D)×13
5	4		Lift up the oprating panel in the direction of arrow ①.
6	5		Knob ..... (E)×1
7	5		Press the cassette eject buttons for tape 1 and tape 2.
8	6		Remove the cassette Lid in the direction of arrow ②. (repeat for tape 1)
9	5		Press the CD eject button and open the cover.
10	7		Push in the 4 disc magnet holder tabs in the direction of arrow ③ and pull out in the direction of arrow ④. ..... (F)×4
11	5		Screw (3×6)mm ..... (G)×2
12	2		Tilt the set toward the back and remove the front cabinet in the direction of arrow ⑥.
13	8	CD Player Unit	Socket (CN10, 11)..... (H)×2
14	7	Dumper Gear	Screw (3×10)mm ..... (I)×1
15	7	Disc Holder	Pull out the shaft in the direction of arrow ⑦.
16	10	Open Lever	Pull the slide Lever in the direction of arrow ⑧ and disengage.
17	11	Slide Lever	Detach the boss of the open lever and pull out in the direction of arrow ⑨.
18	12		Detach the tab of the slide lever and remove in the direction of arrow ⑩.

Note
* 1. Once the front cabinet is removed, the CD player can be removed.
(The CD player is fastened by interlocking with the cabinet.)

(CD Player Unit)

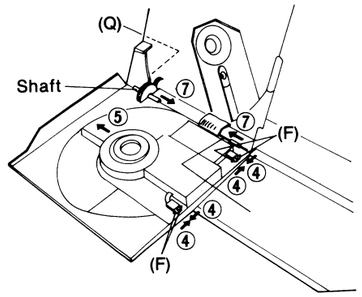


Fig. 7

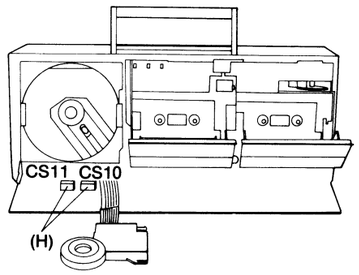


Fig. 8

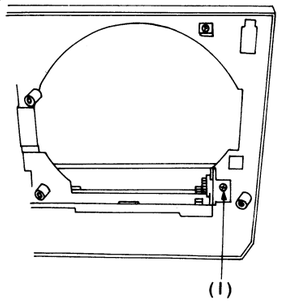


Fig. 9

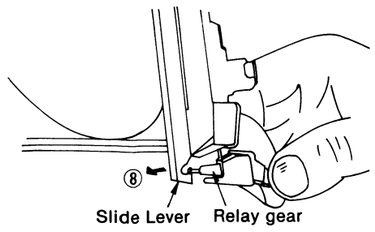


Fig. 10

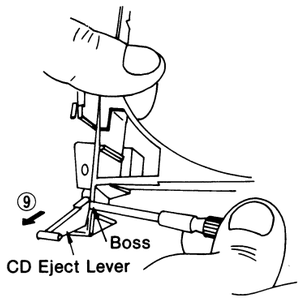


Fig. 11

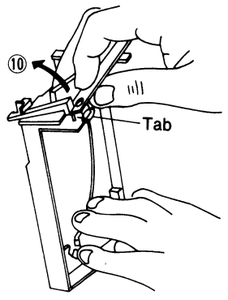


Fig. 12

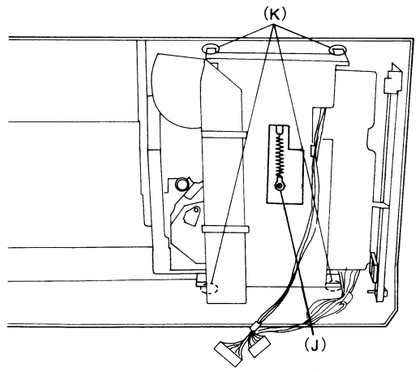


Fig. 13

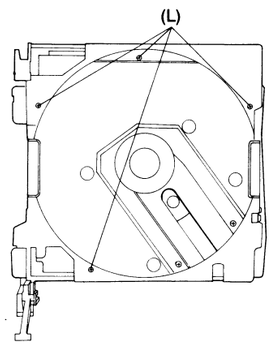


Fig. 14

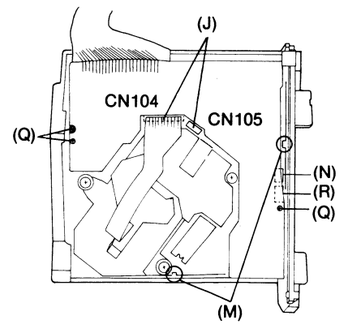


Fig. 15

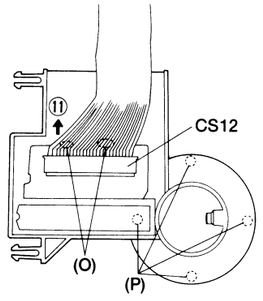


Fig. 16

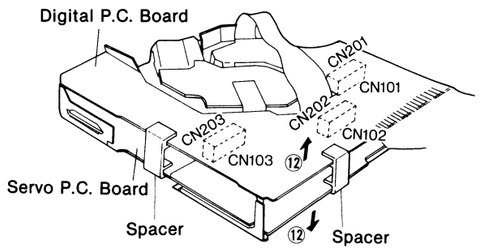


Fig. 17

• CD Player Unit

Ref. No.	Shown in Fig. —.	To remove —.	Remove —.
19	13	Flexible board and Holder	Screw (1.7×3) mm ..... (**J**)×1
20	13		Remove the four ribs ..... (**K**)×4
21	14	Chassis	Screw (1.7×4) mm ..... (**L**)×4
22	15		Remove the two ribs ..... (**M**)×2
23	15		Socket (CN107) ..... (**N**)×1
24	16	LCD P.C.B	Push the socket of CS12 in the direction of arrow ⑪ and remove the flexible board.
25	16		Remove the two ribs ..... (**O**)×2
26	16	Disc Magnet	Screw (2×4) mm ..... (**P**)×4
27	15	PC Boards (Digital and Servo P.C. Board)	Screw (1.7×3) mm ..... (**Q**)×3
28	15		Socket (CN104, 105, 106) ..... (**R**)×3
29	17		Disconnect the connectors (CN201, 202, 203). Then take out the PC board in the direction of arrow ⑫.

(Mechanism and Chassis Unit)

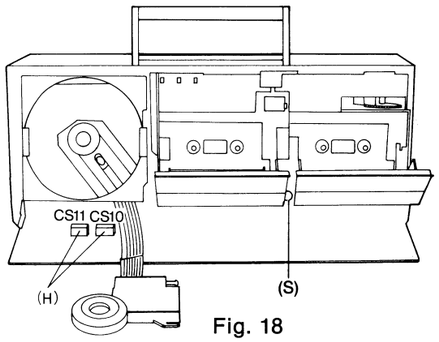


Fig. 18

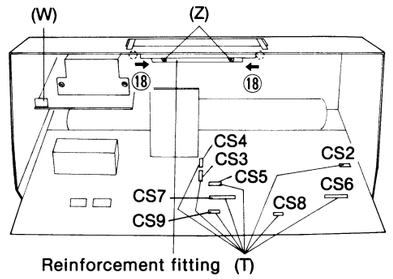


Fig. 19

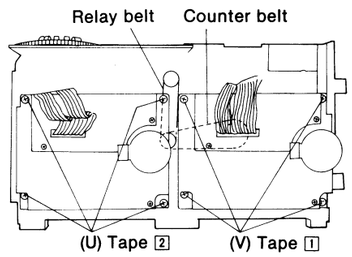


Fig. 20

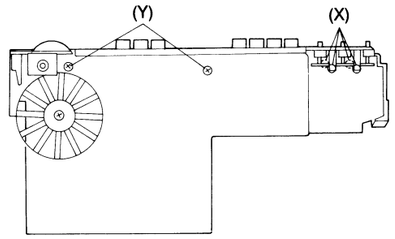


Fig. 21

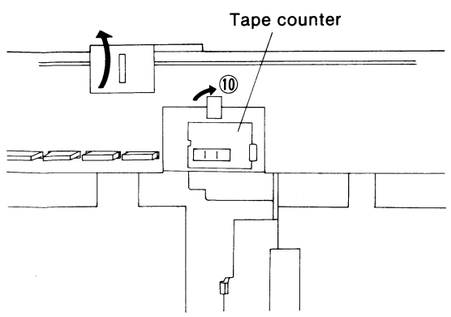


Fig. 22

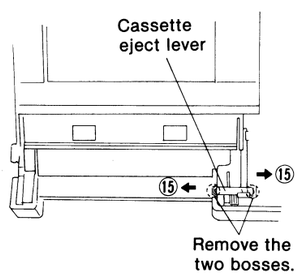


Fig. 23

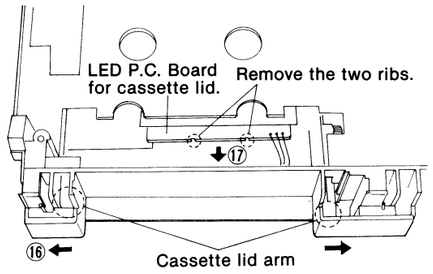


Fig. 24

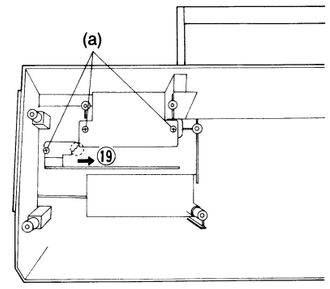


Fig. 25

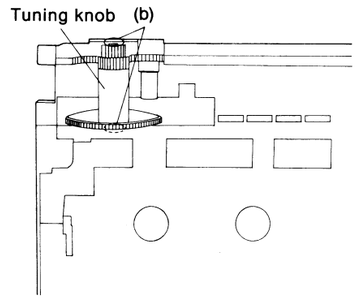


Fig.26

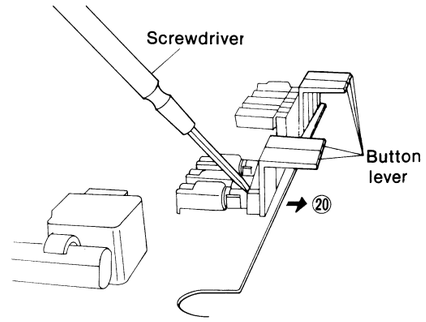


Fig. 27

Ref. No.	Shown in Fig. —.	To remove —.	Remove —.
29	18	Mechanism Unit	Screw (3×10) mm ..... (**S**)×1
30	19		Socket (CN2, 3, 4, 5, 6, 7, 8, 9) ..... (**T**)×8
31	20		Screw (3×10) mm [Tape 2] ..... (**U**)×4
32	20		Screw (3×10) mm [Tape 1] ..... (**V**)×4
33	19	Main PC Board	Socket (CN1) ..... (**W**)×1
34	20	LED PC Board	Remove the four ribs ..... (**X**)×4
35	20	Tuner PC Board	Screw (3×10) mm ..... (**Y**)×2
36	21	Dial Pointer	Detach in the direction of arrow ⑬.
37	21	Tape Counter	Rotate in the direction of arrow ⑭ and pull out.
38	22	Cassette Eject Lever	Press the 2 tabs in the direction of arrow ⑮ and take out take out the lever.
39	23	Cassette Lid	Push the cassette lid arm in the direction of arrow ⑯ and remove it with the cassette lid spring still attached.
40	23	Cassette Lid and LED P.C. Board	Pull out in the direction of arrow ⑰ by datatching the 2 tabs.
41	18	Handle	Screw (3×10) mm ..... (**Z**)×2
42	18		Take out the reinforcement fitting.
43	18		Detach the 2 tabs in the direction of arrow ⑱ and pull out the handle.
44	24	Power Supply P.C. Board	Screw (3×10) mm ..... (**a**)×3
45	24		Detach the tab in the direction of arrow ⑲.
46	25	Tuning Knob	Remove the two ribs ..... (**b**)×2
47	26	Button Lever	Insert a slotted screwdriver between the button lever and switch and push in the direction of arrow ⑳.

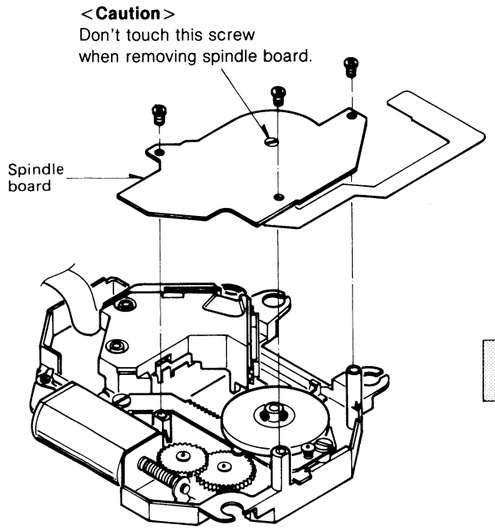
• Servicing Note

(1) Even during operation, the laser diode will not emit light if the disc holder cover is not closed and the S101 (laser power switch) and S103 (close switch) safety switches are not on.

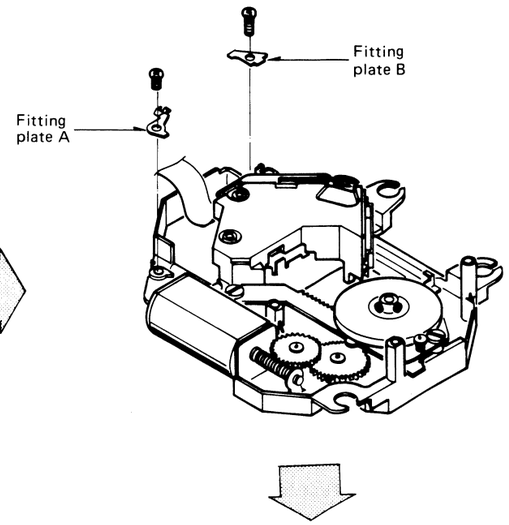
(2) When closing the disc holder cover to turn on the S101 and S103 safety switches, do not look at the laser pickup lens.

■ How to remove the optical pickup

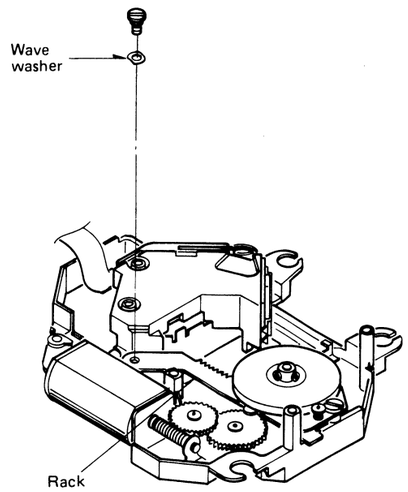
1. Remove the 3 setscrews of the spindle board.



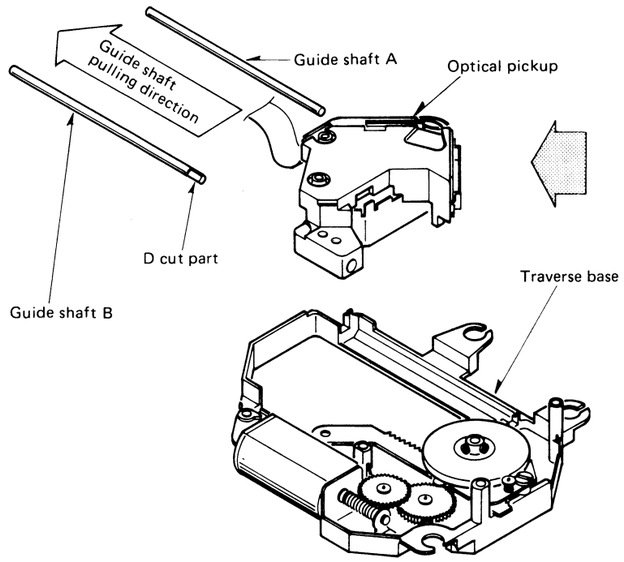
2. Remove the 2 setscrews of the guide shaft fitting plate A and B.



3. Remove the rack setscrew.
Note: Take care not to lose the wave washer.



4. Pull out the guide axes A and B in the direction of the arrow.

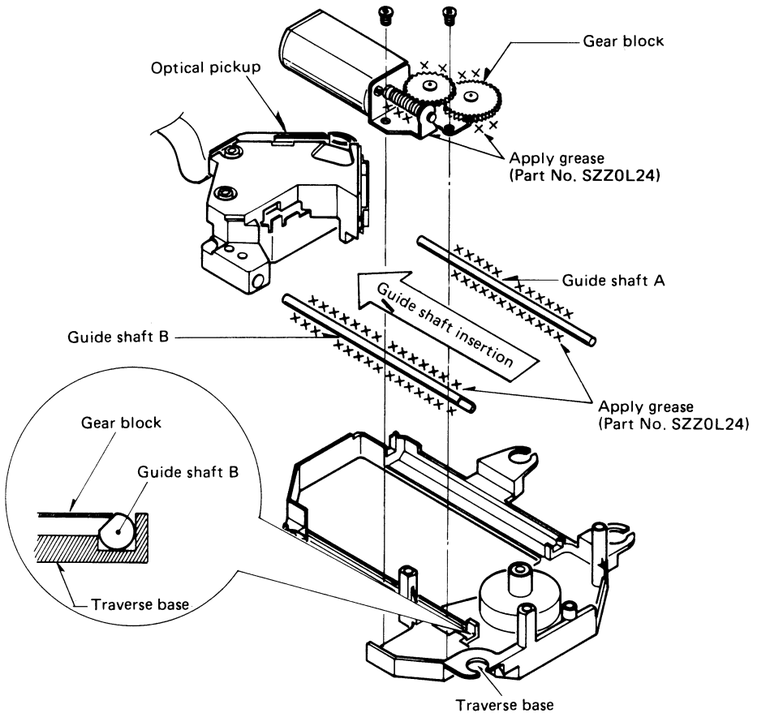


■ Cautions for assembly

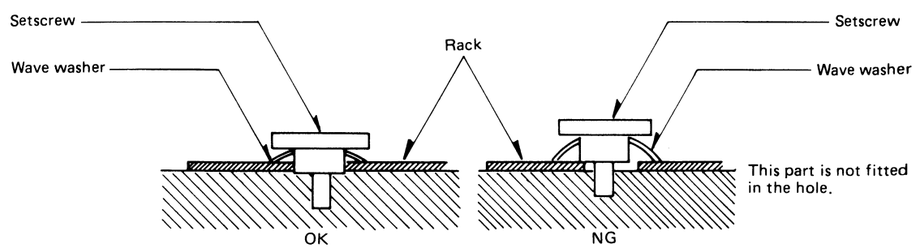
The assembly work can be done by reversing the disassembly procedure. Keep the following points in mind.

1. Be sure to insert the guide shaft in the direction of the arrow.
   If it is inserted in the wrong direction, the interval plate spring may be damaged.

2. Make sure that the D cut off guide shaft B is fitted in the position as shown.



3. Tighten the rack setscrew as shown.

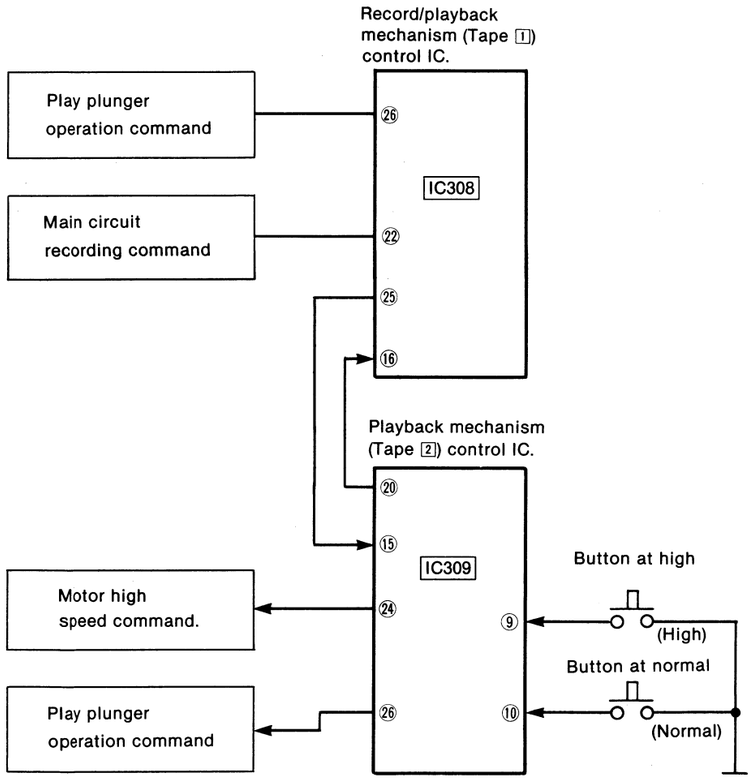


INTRODUCTION TO NEW FUNCTIONS

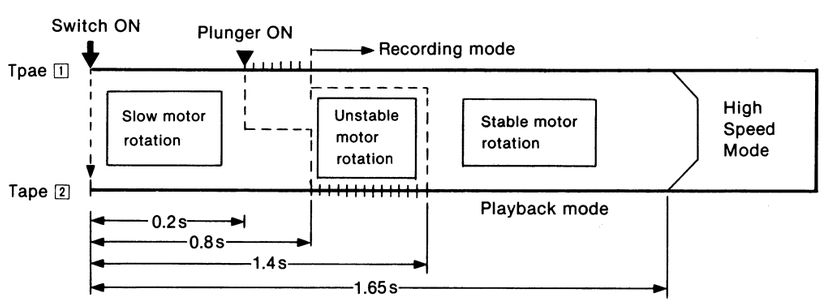
1. One-Touch Tape Editing Operation

The RX-CD70 is equipped with a function that can be dubbing (from thape [2] to tape [1]) at normal or high speed with a signal touch of a button. In this operation, tape [1] is in the recording mode and tape [2] is in the play mode. This minimizes the consumption of the batteries when the mechanism starts operating.

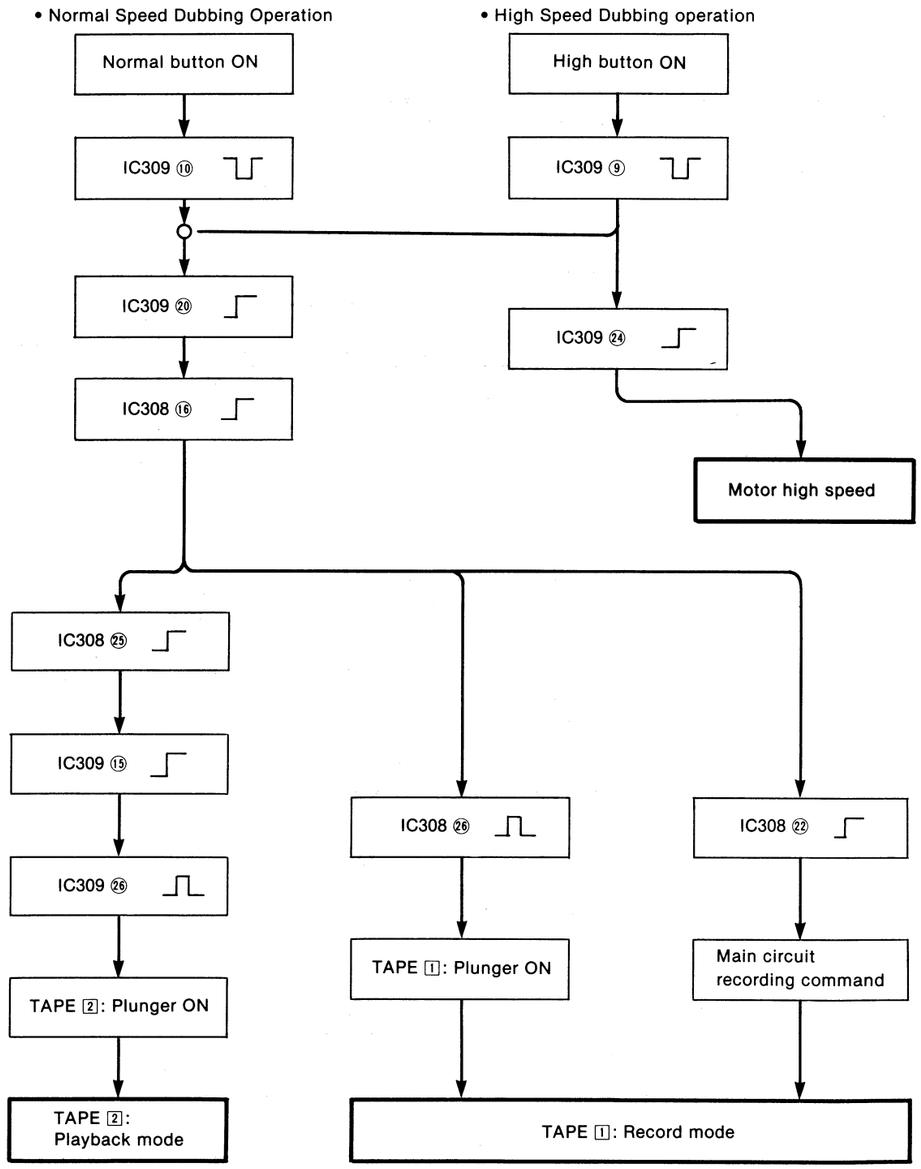
〈Basic Operation〉



〈Timing Chart〉



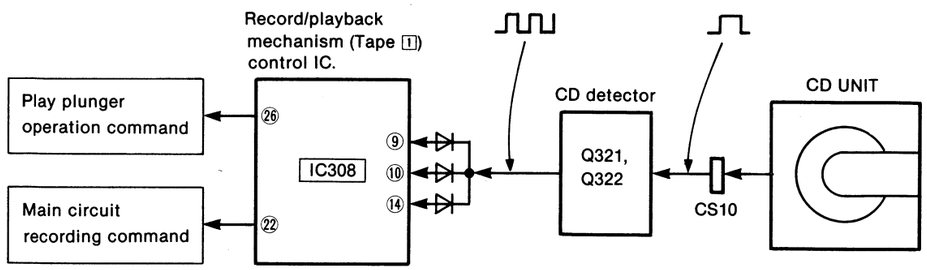
〈FlowChat〉



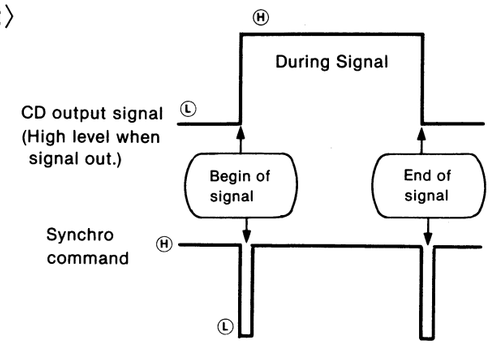
2. CD Synchro-Recording Operation

The RX-CD70 provides a synchro-recording function that starts recording tape [1] when the CD is played and stops recording tape [1] when the CD is stopped.

〈Basic Operation〉



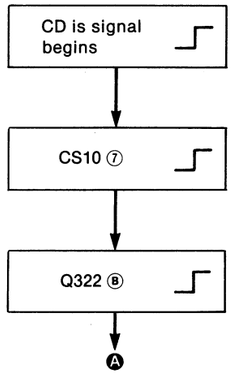
〈Timing Chart〉



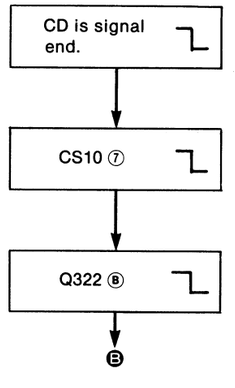
Note: The synchro command is sent to IC308 as the AND operation of the inputs at pins ⑨ (REV), ⑩ (REW), and ⑭ (REC).

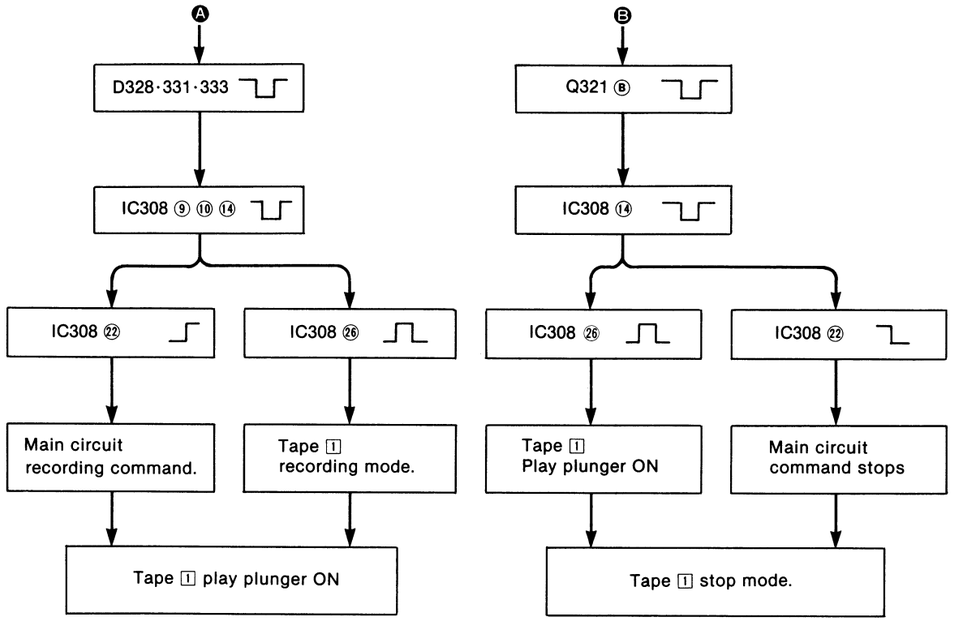
〈Flowchat〉

• When the CD is signal begins.



• When the CD is signal end.

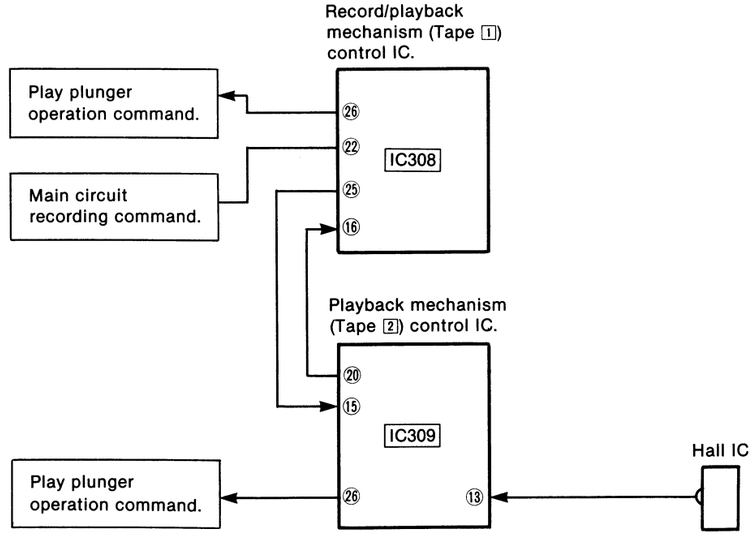




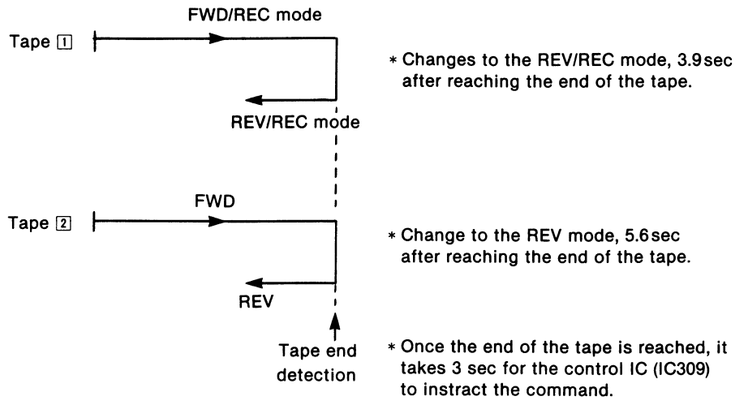
3. Synchro-Reverse Operation

Once the ⟲ button is turned on for one-touch dubbing, the end of the [2] (Playback) is detected. Then, tape [1] (record/playback) and tape [2] are switch to reverse mode in the dubbing condition.

〈Basic Operation〉

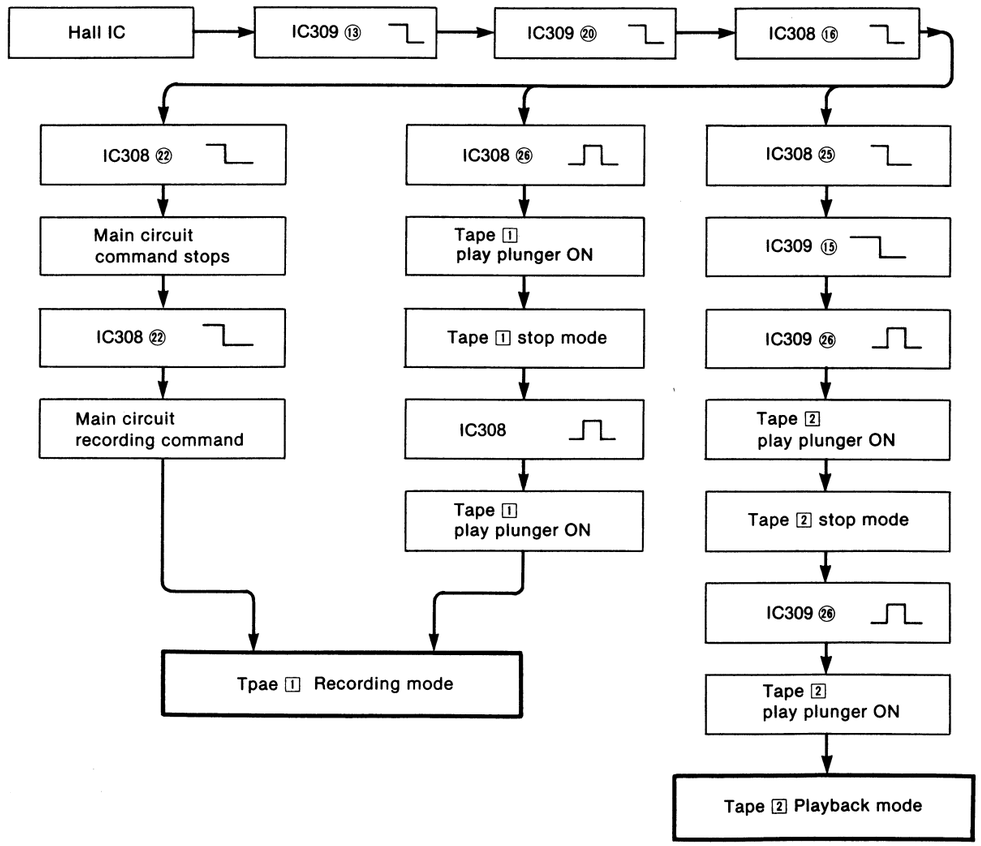


〈Timing Chart〉

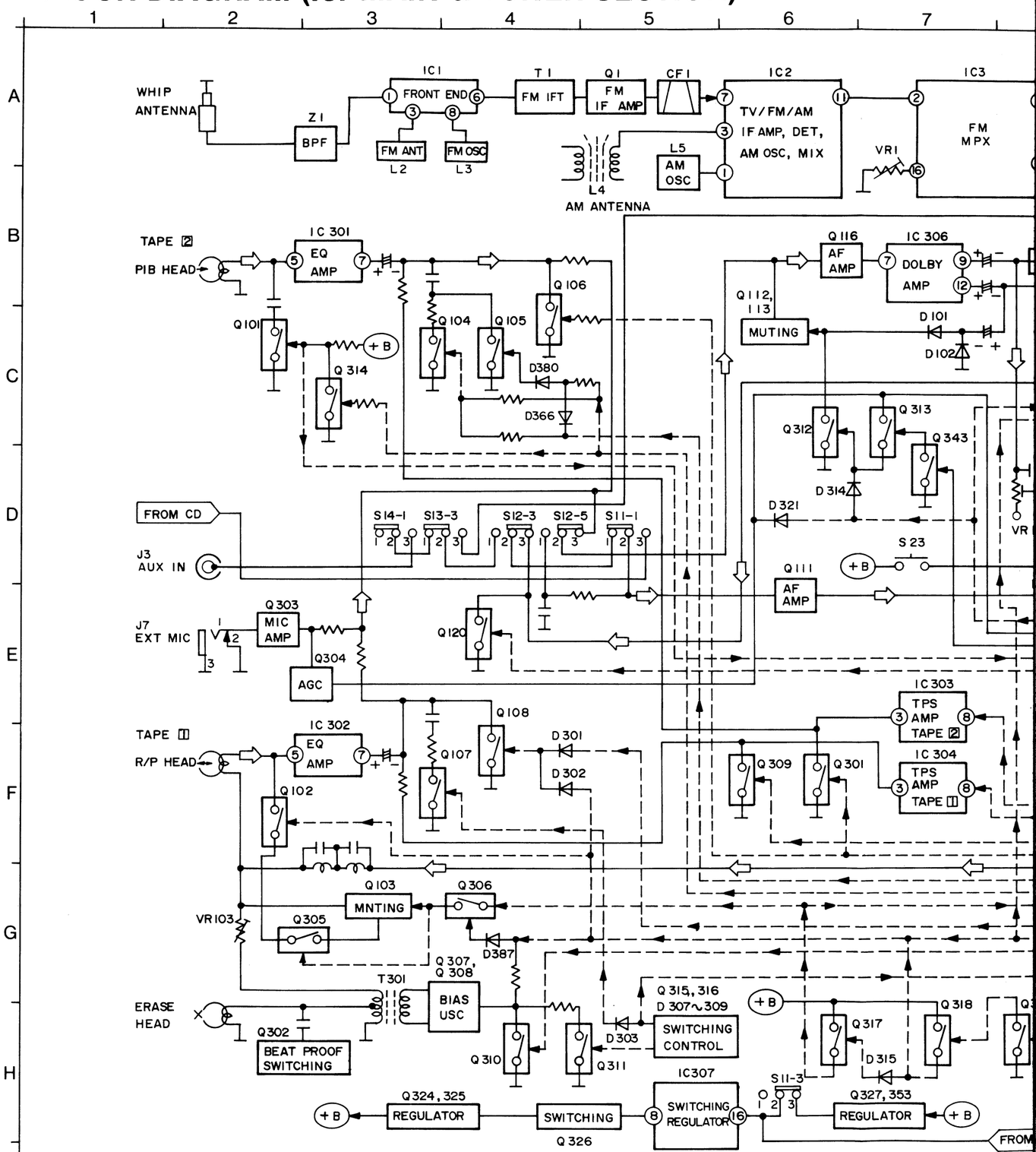


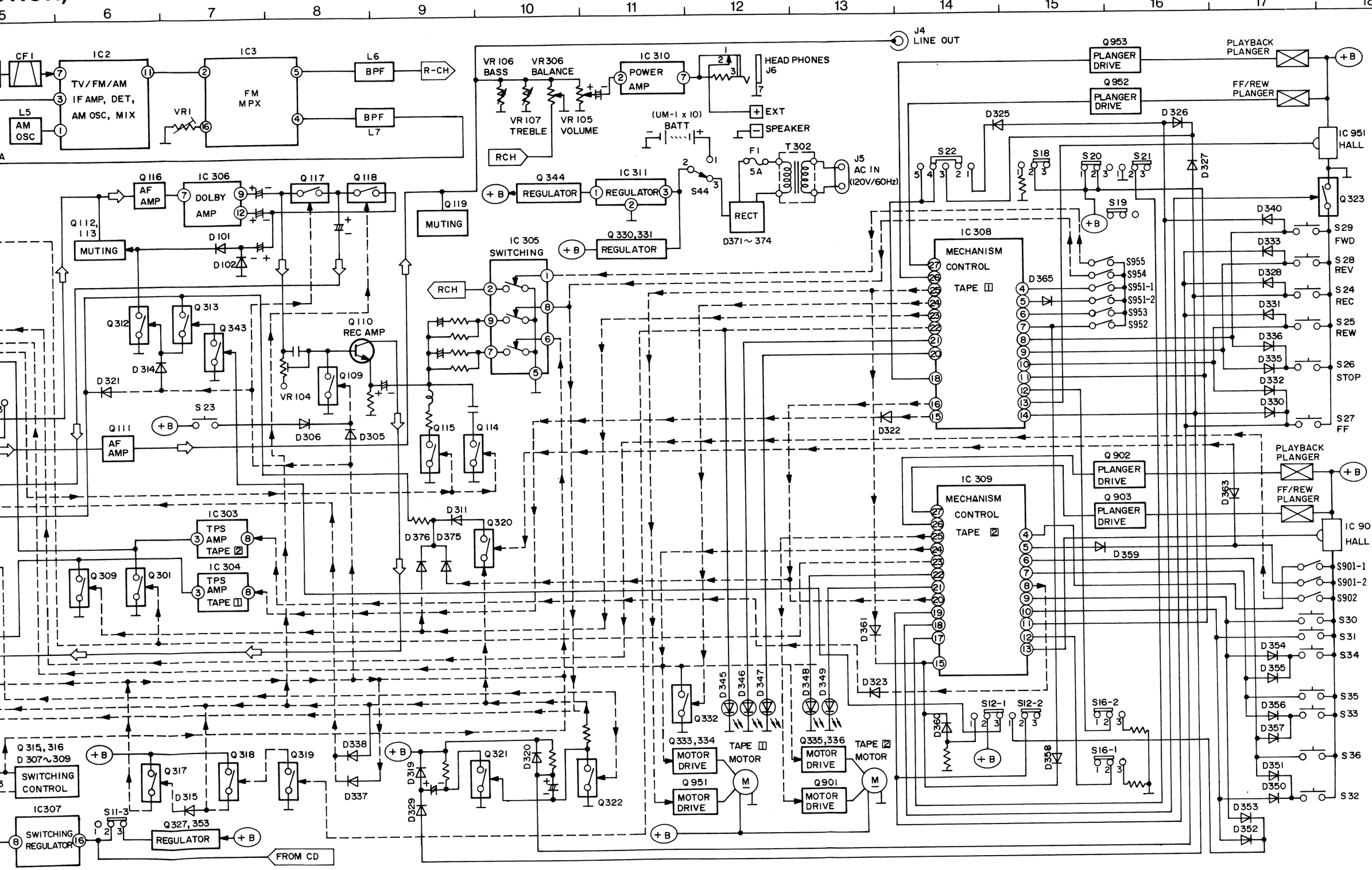
* Changes to the REV/REC mode, 3.9sec after reaching the end of the tape.
* Change to the REV mode, 5.6sec after reaching the end of the tape.
* Once the end of the tape is reached, it takes 3 sec for the control IC (IC309) to instract the command.

〈Flowchart〉

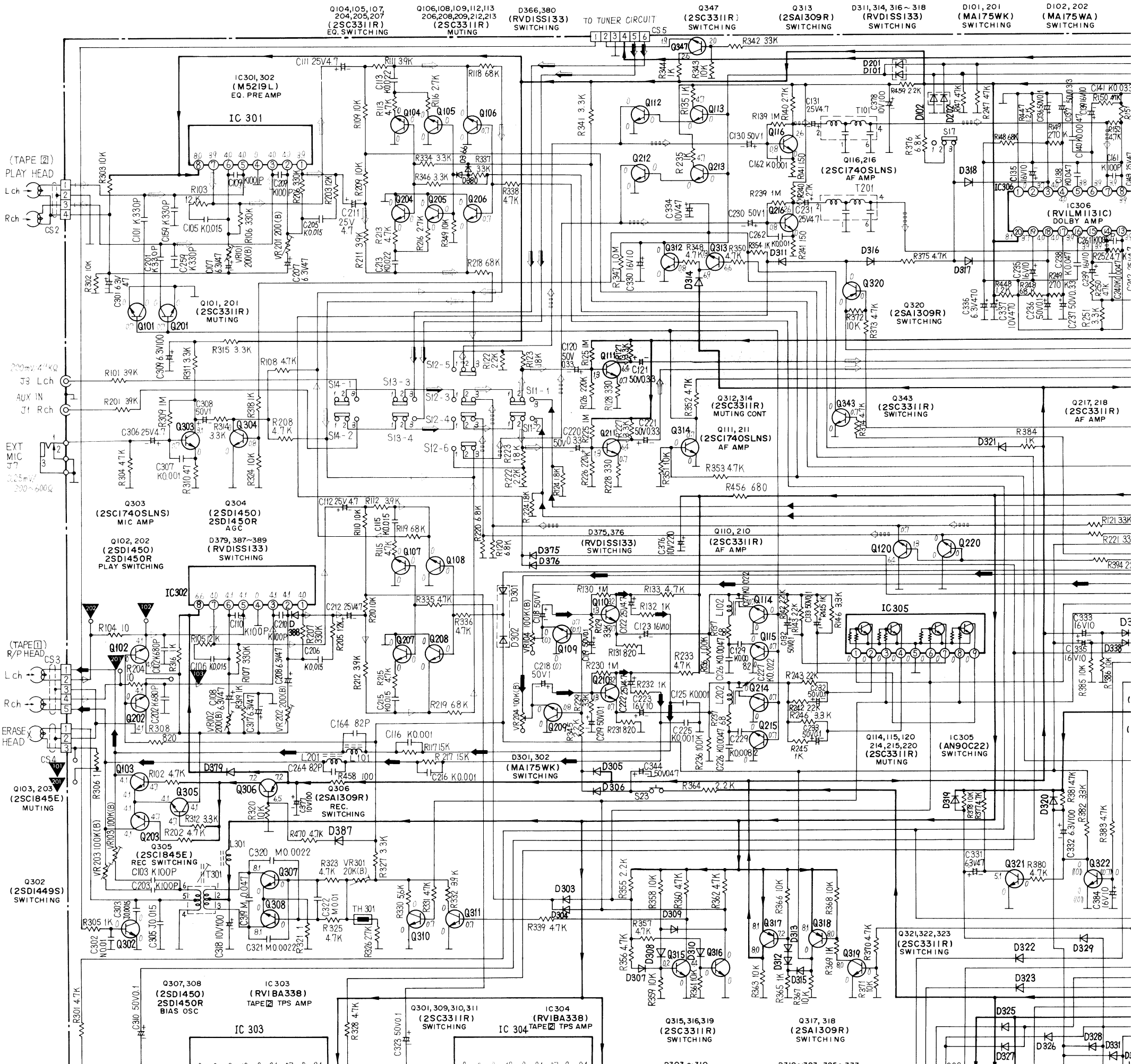


BLOCK DIAGRAM (for MAIN & TUNER SECTION)




5 6 7 8 9 10 11 12 13 14 15 16 17 18
CF1
IC2
TV/FM/AM IF AMP, DET, AM OSC, MIX
L5 AM OSC
VR1
IC3
FM MPX
L6 BPF
R-CH
BPF L7
VR 106 BASS
VR306 BALANCE
VR 107 TREBLE
VR 105 VOLUME
IC 310 POWER AMP
HEAD PHONES J6
EXT
SPEAKER
(UM-1 x 10) BATT
RCH
F1 5A
T302
J5 AC IN (120V/60Hz)
RECT
D371~374
Q 344 REGULATOR
IC 311 REGULATOR
S44
Q 330,331 REGULATOR
+B
J4 LINE OUT
Q953 PLANGER DRIVE
Q952 PLANGER DRIVE
PLAYBACK PLANGER
FF/REW PLANGER
D325
D326
S22
S18
S20
S21
D327
S19
IC 951 HALL
Q323
D340
S29 FWD
D333
S28 REV
D328
S24 REC
D331
S25 REW
D336
D335
S26 STOP
D332
D330
S27 FF
Q116 AF AMP
IC 306 DOLBY AMP
Q117
Q118
Q119 MUTING
Q112, 113 MUTING
D101
D102
IC 305 SWITCHING
IC 308 MECHANISM CONTROL TAPE 1
D365
S955
S954
S951-1
S951-2
S953
S952
Q312
Q313
Q343
D314
D321
Q110 REC AMP
VR 104
Q109
S 23
Q111 AF AMP
D306
D305
Q115
Q114
D322
Q902 PLANGER DRIVE
Q903 PLANGER DRIVE
PLAYBACK PLANGER
FF/REW PLANGER
IC 309 MECHANISM CONTROL TAPE 2
D363
D359
IC 901 HALL
S901-1
S901-2
S902
IC303 TPS AMP TAPE 2
IC 304 TPS AMP TAPE 1
D311
Q320
D376
D375
Q309
Q301
S30
S31
S34
D354
D355
D361
D323
S35
S33
D356
D357
S36
D351
D350
S32
D353
D352
D345
D346
D347
D348
D349
Q332
Q333,334 MOTOR DRIVE
TAPE 1 MOTOR
Q951 MOTOR DRIVE
Q335,336 MOTOR DRIVE
TAPE 2 MOTOR
Q901 MOTOR DRIVE
M
S12-1
S12-2
S16-2
S16-1
D360
D358
Q315, 316
D 307~309
SWITCHING CONTROL
Q317
Q318
Q319
D315
D338
D337
D319
D329
Q321
D320
Q322
IC307 SWITCHING REGULATOR
S11-3
Q327, 353 REGULATOR
FROM CD

MAIN CIRCUIT



Notes:

1. S10: Function selector muting switch.
2. S11~S14: Function select switch. (S11-1~S11-4...CD, S12-1~S12-6...Tape, S13-1~S13-4...Radio, S14-1, S14-2...AUX IN)
3. S15-1, S15-2: Power ON/OFF switch. (1...OFF, 3...ON)
4. S16-1, S16-2: Blank skip switch.
5. S17: Dolby NR switch.
6. S18~S21: Reverse mode select switch. (S18..., S19..., S20..., S21...)
7. S22: Timer stand by select switch in "OFF" position. (P...PLAY, O...OFF, R...REC)
8. S23: REC mute switch.
9. S24: REC stand-by switch.
10. S25: Rewind switch.
11. S26: Stop switch.
12. S27: Fast forward switch.
13. S28: Reverse switch.
14. S29: Foward switch.

(9. ~ 14. for Tape 1 Deck)

15. S30: High speed dubbing switch.
16. S31: Normal speed dubbing switch.
17. S32: Rewind switch.
18. S33: Stop switch.
19. S34: Fast forward switch.
20. S35: Reverse switch.
21. S36: Forward switch.

(17. ~ 21. for Tape 2 Deck)

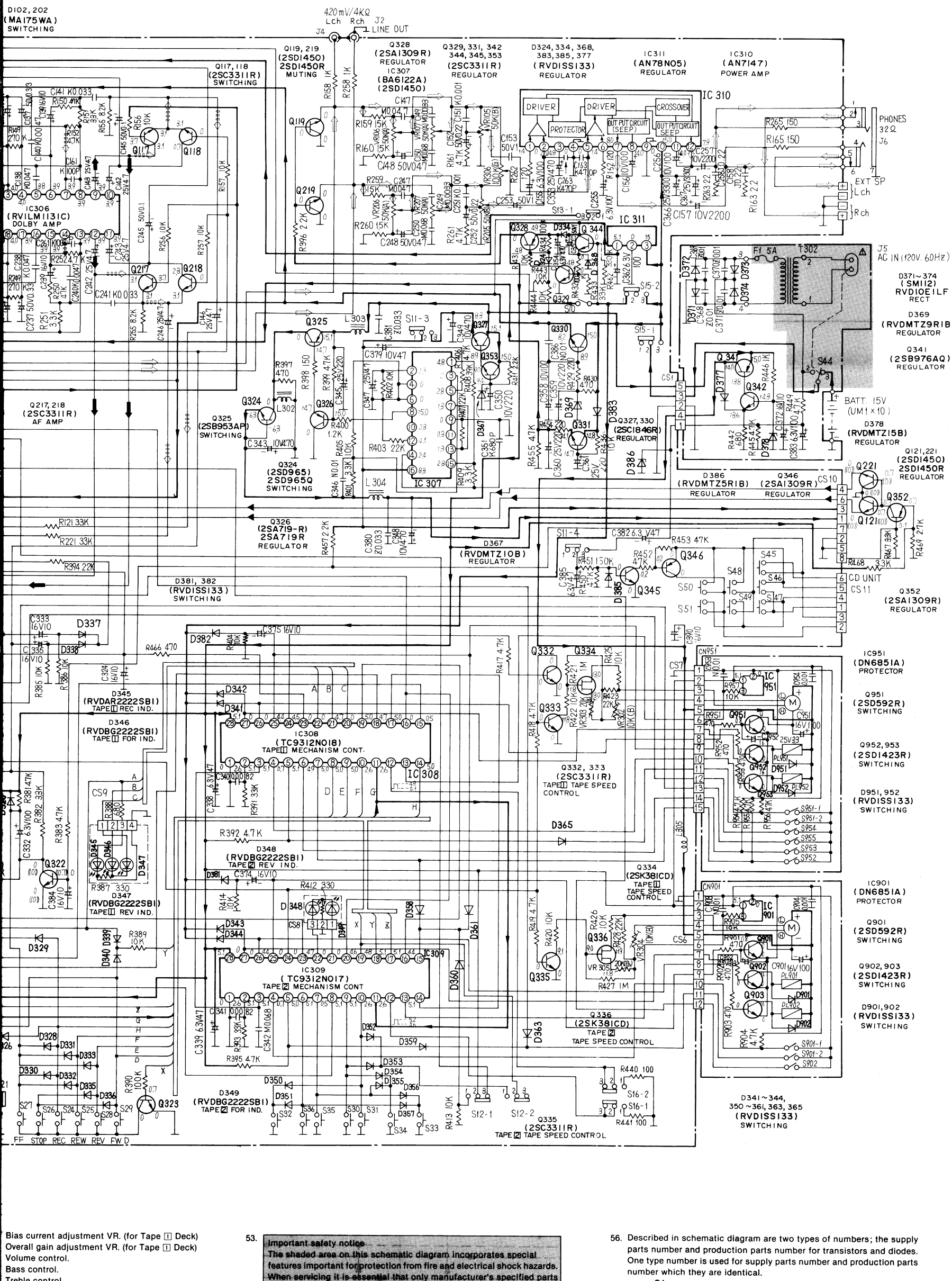
22. S44: AC/DC changing switch. (1...AC, 3...DC)
23. S45: Memory/recall switch.
24. S46: Remain time switch.
25. S47: Repeat switch.
26. S48: Foward skip switch.
27. S49: Reverse skip switch.
28. S50: Play/pause switch.
29. S51: Stop switch.
30. S901-1: FF/REW mode switch.
31. S901-2: Playback mode switch.
32. S902: Auto tape select switch. (70μs/120μs)

(30. ~ 32. for Tape 2 Deck)

33. S951-1: FF/REW mode switch.
34. S951-2: Playback mode switch.
35. S952: Forward record inhibit switch.
36. S953: Reverse record inhibit switch.
37. S954: Auto tape select switch. (70μs/120μs)
38. S955: Auto tape select switch. (Metal detection)

(33. ~ 38. for Tape 1 Deck)

39. VR101, 201: Playback gain adjustment VR. (for Tape 2 Deck)
40. VR102, 202: Playback gain adjustment VR. (for Tape 1 Deck)
41. VR103, 203: Bias current adjustr
42. VR104, 204: Overall gain adjustr
43. VR105, 205: Volume control.
44. VR106, 206: Bass control.
45. VR107, 207: Treble control.
46. VR301: Erase curent adjust
47. VR302: High speed dubbing (for Tape 1 Deck)
48. VR303: Normal speed dubb (for Tape 1 Deck)
49. VR304: High speed dubbing (for Tape 2 Deck)
50. VR305: Normal speed dubb (for Tape 2 Deck)
51. VR306: Balance control.
52. The mark ( ) shows test point



Bias current adjustment VR. (for Tape 1 Deck)
Overall gain adjustment VR. (for Tape 1 Deck)
Volume control.
Bass control.
Treble control.
Erase curent adjustment VR.
High speed dubbing adjustment VR.
(for Tape 1 Deck)
Normal speed dubbing adjustment VR.
(for Tape 1 Deck)
High speed dubbing adjustment VR.
(for Tape 2 Deck)
Normal speed dubbing adjustment VR.
(for Tape 2 Deck)
Balance control.
) shows test point e.g. ▼ = test point 1.

53. **Important safety notice**
The shaded area on this schematic diagram incorporates special features important for protection from fire and electrical shock hazards. When servicing it is essential that only manufacturer's specified parts be used for the critical components in the shaded areas of the schematic.

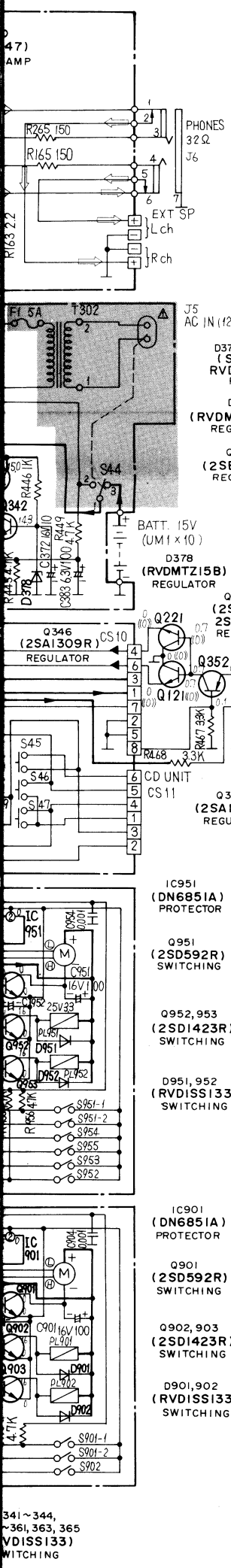
54. DC voltage measurement are taken with electronics voltmeter from negative terminal of battery.
[ ]...Recording position, No mark...Playback position.

55. Battery current: No signal 190mA
Maximum output:
Radio 860mA
Tape/Playback 1.2A
Tape/Recording ..... 400mA (VR min, AUX IN)
Normal Speed Dubbing 520mA
High Speed Dubbing 550mA

56. Described in schematic diagram are two types of numbers; the supply parts number and production parts number for transistors and diodes. One type number is used for supply parts number and production parts number which they are identical.
e.g. Q1
2SC2412NRTB, LNSTB ← Production parts number
[2SC2412] ← Supply parts number

57. The supply parts number is described alone in the replacement parts list.

- **This schematic diagram may be modified at any time with the development of new technology.**



ram are two types of numbers; the supply
parts number for transistors and diodes.
supply parts number and production parts
ical.

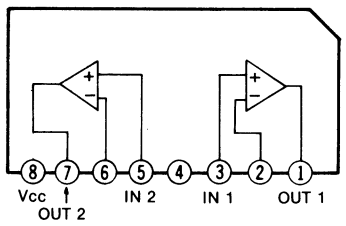
← **Production parts number**
— **Supply parts number**
described alone in the replacement parts

may be modified at any time with the
nology.

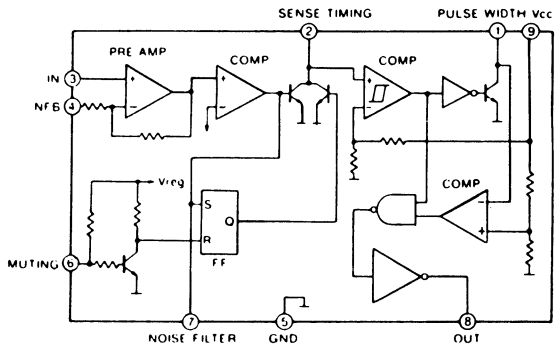
: Tape 1 (Playback) Signal Line
: Tape 2 (Playback) Signal Line
: Tape 1 (Recording) Signal Line
: Tape 1 2 (MIX) Signal Line
: Radio (FM) Signal Line
: Main (Tape/Radio/CD) Signal Line
: CD PLAY Signal Line
: +(B) Voltage Line

• EQUIVALENT CIRCUIT

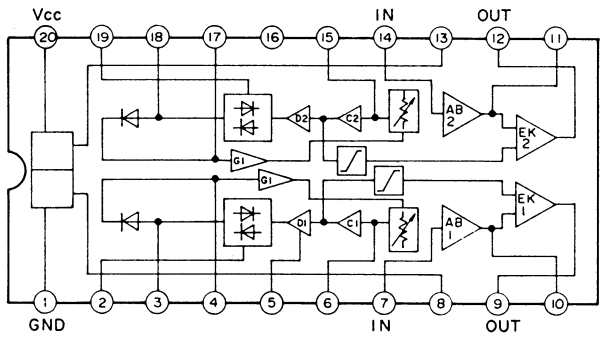
IC301, 302 M5219L



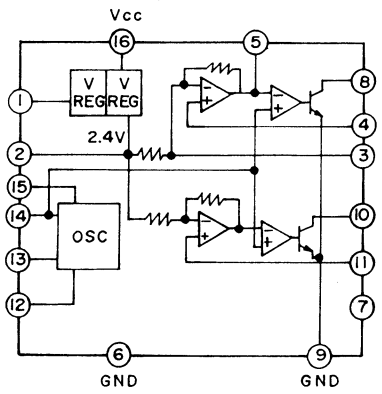
IC303, 304 RVIBA338



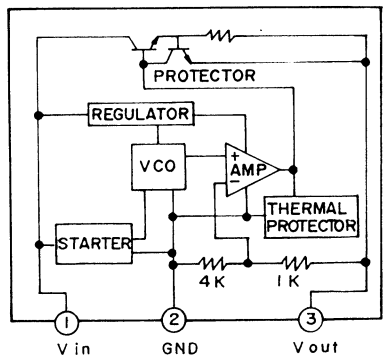
IC306 RVILM1131C



IC307 BA6122A

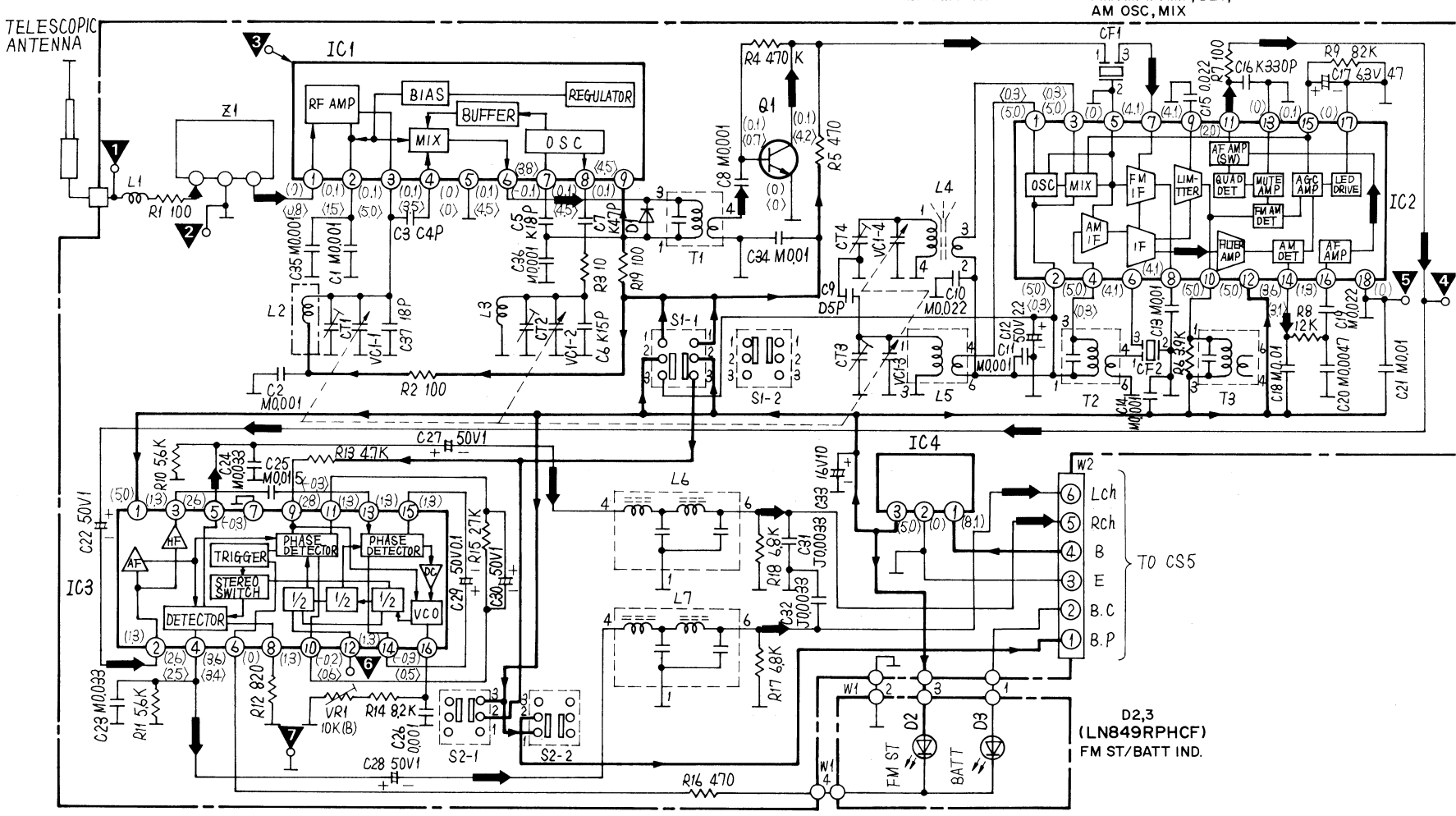


IC4, 311 AN78N05



TUNER CIRCUIT

IC3 (RVIBA1332L) FM MPX
IC1 (RVITA7358P) FRONT END
DI (RVDISS133) FM AGC
Q1 (2SC3313B) IF AMP
IC4 (AN78L05) REGULATOR
IC2 (BA4234L) FM/AM IFAMP, DET, AM OSC, MIX



Notes:

1. S1-1, S1-2: Band select switch in "AM" position. (A...AM, F...FM)
2. S2-1, S2-2: FM mode/select switch in "MONO/II" position. (M...MONO/II, S...Stereo/I)
3. VR1: FM VCO adjustment VR.
4. DC voltage measurement are taken with electronics voltmeter from negative terminal of battery.
   < >...FM position, ( )...AM position.
5. Described in schematic diagram are two types of numbers; the supply parts number and production parts number for transistors and diodes. One type number is used for supply parts number and production parts number which they are identical.
   e.g. Q1
   2SC2412NRTB, LNSTB ← Production parts number
   [2SC2412] ← Supply parts number
6. The supply parts number is described alone in the replacement parts list.

- **This schematic diagram may be modified at any time with the development of new technology.**

→ +(B) Voltage Line, ➡ Radio (FM) Signal Line

ELECTRICAL PARTS LIST (Main & Tuner Section)

REPLACEMENT PARTS LIST

Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.

Ref. No.	Part No.	Part Name & Description
		INTEGRATED CIRCUITS
IC 1	**RViTA7358P**	IC (Front End)
IC 2	**BA4234L**	IC (MIX/IF/DET)
IC 3	**RViBA1332L**	IC (FM MPX)
IC 4	**AN78L05**	IC (Regulator)
IC 301, 302	**M5219L**	IC (EQ AMP)
IC 303, 304	**RViBA338**	IC (TPS)
IC 305	**AN90C22**	IC (Switching)
IC 306	**RViLM1131C**	IC (Dolby)
IC 307	**BA6122A**	IC (Switching Regulator)
IC 308	**TC9312N018**	IC (Tape [1] Mechanism Cont.)
IC 309	**TC9312N017**	IC (Tape [2] Mechanism Cont.)
IC 310	**AN7147**	IC (Power AMP)
IC 311	**AN78N05**	IC (Regulator)
IC 901, 951	**DN6851A**	IC (Hall IC)
		TRANSISTORS
Q 1	**2SC3313B**	Transistor
Q 101, 104, 105, 106, 107, 108, 109, 110, 112, 113, 114, 115, 117, 118, 120, 201, 204, 205, 206, 207, 208, 209, 210, 212, 213, 214, 215, 217, 218, 220, 301, 309, 310, 311, 312, 314, 315, 316, 319, 321, 322, 323, 329, 331, 332, 333, 335, 342, 343, 344, 345, 347, 353	**2SC3311R**	Transistor
Q 102, 119, 121, 202, 219, 221, 304, 307, 308	**2SD1450R**	Transistor
Q 103, 203, 305	**2SC1845E**	Transistor
Q 111, 116, 211, 216, 303	**2SC1740SLNS**	Transistor
Q 302	**2SD1449S**	Transistor
Q 306, 313, 317, 318, 320, 328, 346, 352	**2SA1309R**	Transistor
Q 324	**2SD965Q**	Transistor
Q 325	**2SB953AP**	Transistor
Q 326	**2SA720-R**	Transistor
Q 327, 330	**2SC1846R**	Transistor
Q 334, 336	**2SK381CD**	Transistor
Q 341	**2SB976AQ**	Transistor
Q 901, 951	**2SD592R**	Transistor
Q 902, 903, 952, 953	**2SD1423R**	Transistor
		DIODES & RECTIFIERS
D 1	**RVD1SS133**	Diode
D 2, 3	**LN849RPHCF**	LED
D 101, 301	**MA175WK**	Diode
D 102	**MA175WA**	Diode
D 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 363, 365, 366, 368, 375, 376, 377, 379, 380, 381, 382, 383, 385, 387, 388, 389	**RVD1SS133**	Diode
D 345	**RVDAR2222SB1**	LED
D 346, 347, 348, 349	**RVDBG2222SB1**	LED
D 367	**RVDMTZ10B**	Diode
D 369	**RVDMTZ9R1B**	Diode
D 371, 372, 373, 374	**SM112**	Rectifier
D 378	**RVDMTZ15B**	Diode
D 386	**RVDMTZ5R1B**	Diode
D 901, 902, 951, 952	**RVD1SS133**	Diode
		COILS
L 1	**RLQY30S1**	Coil, Choke
L 3	**RLD4Y44**	Coil, FM OSC
L 4	**RLF2V83**	Coil, AM ANT
L 5	**RL02B105**	Coil, AM OSC
L 6, 7	**RLE5031**	Filter
L 101, 201	**RLQZM473J**	Choke Coil
L 102, 202	**RLQZB822K**	Choke Coil
L 301	**RLQZB470K**	Choke Coil
L 302	**RLQV201K**	Choke Coil
L 303, 304	**RLQW500K**	Choke Coil
L 305	**RLQZB8R2K**	Choke Coil
		TRANSFORMERS
T 1, 3	**RLi4B153**	IFT, FM 1st, 2nd
T 2	**RLi2B458**	IFT, AM
T 101, 201	**RLE9B2**	B.P.F
T 301	**RL08C4**	Bias Oscillation
T 302	**RLT5L5M1A**	Power Transformer ⚠
		VARIABLE CAPACITOR
VC 1	**RCV4LC2V1K**	Variable Capacitor/with CT1 ~ 4
		VARIABLE RESISTORS
VR 1	**QVNB3A00B103**	FM VCO Adj. VR (10kΩ/B)
VR 101, 102, 201, 202	**EVND4AA00B22**	Playback Gain Adj. VR (22Ω/B)
VR 103, 104, 203, 204	**EVND4AA00B15**	Bias Current, Overall Gain Adj. VR (150kΩ/B)
VR 105, 205	**EWANA4X05B54**	Volume Control
VR 106, 107, 206, 207	**EWAKA2X05A54**	Bass, Treble Control
VR 301, 303, 305	**EVND4AA00B24**	Erase Current, Tape Speed Adj. VR (Nor. Speed/20kΩ, B)
VR 302, 304	**EVND4AA00B14**	Tape Speed Adj. VR (High Speed/140kΩ, B)
VR 306	**EWAKF1X05G15**	Balance Control
		CERAMIC FILTERS
CF 1	**RVF107WAZ**	Ceramic Filter (10.7MHz)
CF 2	**RVFPFA455A**	Ceramic Filter (455kHz)
		THERMISTOR
TH 301	**RRT202**	Thermistor
		FILTER
Z 1	**RXABPMB6A**	B.P.F
		FUSE
F 1	**XBA1C50NU100**	Fuse (5A) ⚠
		SWITCHES
S 1, 2	**ESB621589**	Switch, Band, FM Mode
S 11, 12, 13, 14	**ESB621562**	Slide Switch (CD, Tape, Radio, AUX)
S 15	**RSH2B38Z**	Push Switch (Power ON/OFF)
S 16, 17	**ESB6488**	Slide Switch (Blanck Skip, Dolby)
S 18, 19, 20, 21	**ESB68508**	Slide Switch (, , ,)
S 22	**RSS3A12Z**	Slide Switch (Timer Standby)
S 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 45, 46, 47, 48, 49, 50, 51	**EVQQS405K**	Slide Switch (REC Mute, REC Standby, REW, Stop, FF, Reverse, Forward, Normal/High Speed)
S 901, 951	**RSH1B12Z**	Push Switch
S 902, 952, 953, 954, 955	**RSH1A46Z**	Push Switch
		JACKS
J 1, 2	**RJF1094Y**	AUX IN/LINE OUT (R-CH)
J 3, 4	**RJF1094Z**	AUX IN/LINE OUT (L-CH)
J 5	**RJJ1A3Y**	Jack, AC IN
J 6	**RJJD9S1Z**	Jack, Headphones
J 7	**RJJ1D20Y**	Jack, EXT. MIC

RESISTORS AND CAPACITORS (Main & Tuner Section)

Numbering System of Resistor

Example

ERD	25	F	J	101
Type	Wattage	Shape	Tolerance	Value (100Ω)
ERX	2	AN	J	2R2
Type	Wattage	Shape	Tolerance	Value (2.2Ω)

Resistor Type	Wattage Tolerance
ERD: Carbon	10 : 1/8 W J : ±5%
ERG: Metal Film	12 : 1/2 W
ERX: Metal Film	25 : 1/4 W
ERQ: Fuse Type Metal	1 : 1 W
RRD: Carbon (Chip Type)	18 : 1/8 W

Numbering System of Capacitor

Example

ECKD	1H	102	Z	F
Type	Voltage	Value (1000 pF)	Tolerance	Peculiarity
ECEA	50	M	R47	
Type	Voltage	Peculiarity	Value (0.47 μF)	

Capacitor Type	Voltage		Tolerance
	ECEA Type	Other	
ECEA: Electrolytic	0J : 6.3 V	2H : 500 V DC	C : ±0.25 pF
ECCD: Ceramic	1A : 10 V	1 : 100 V	J : ±5%
ECKD: Ceramic	1C : 16 V	DKC : 400 V AC	K : ±10%
ECQM: Polyyester	1E : 25 V		Z : +80%, −20%
	1H : 50 V		
ECQP: Polyproylene	1V : 35 V		P : +100%, −0%
	50 : 50 V		
ECET: Electrolytic			
ECEA□□□N: Non Polar Electrolytic	25 : 25 V		
	16 : 16 V		
QCU □: Ceramic (Chip Type)			
ECUX: Ceramic (Chip Type)			

REPLACEMENT PARTS LIST

CAPACITORS

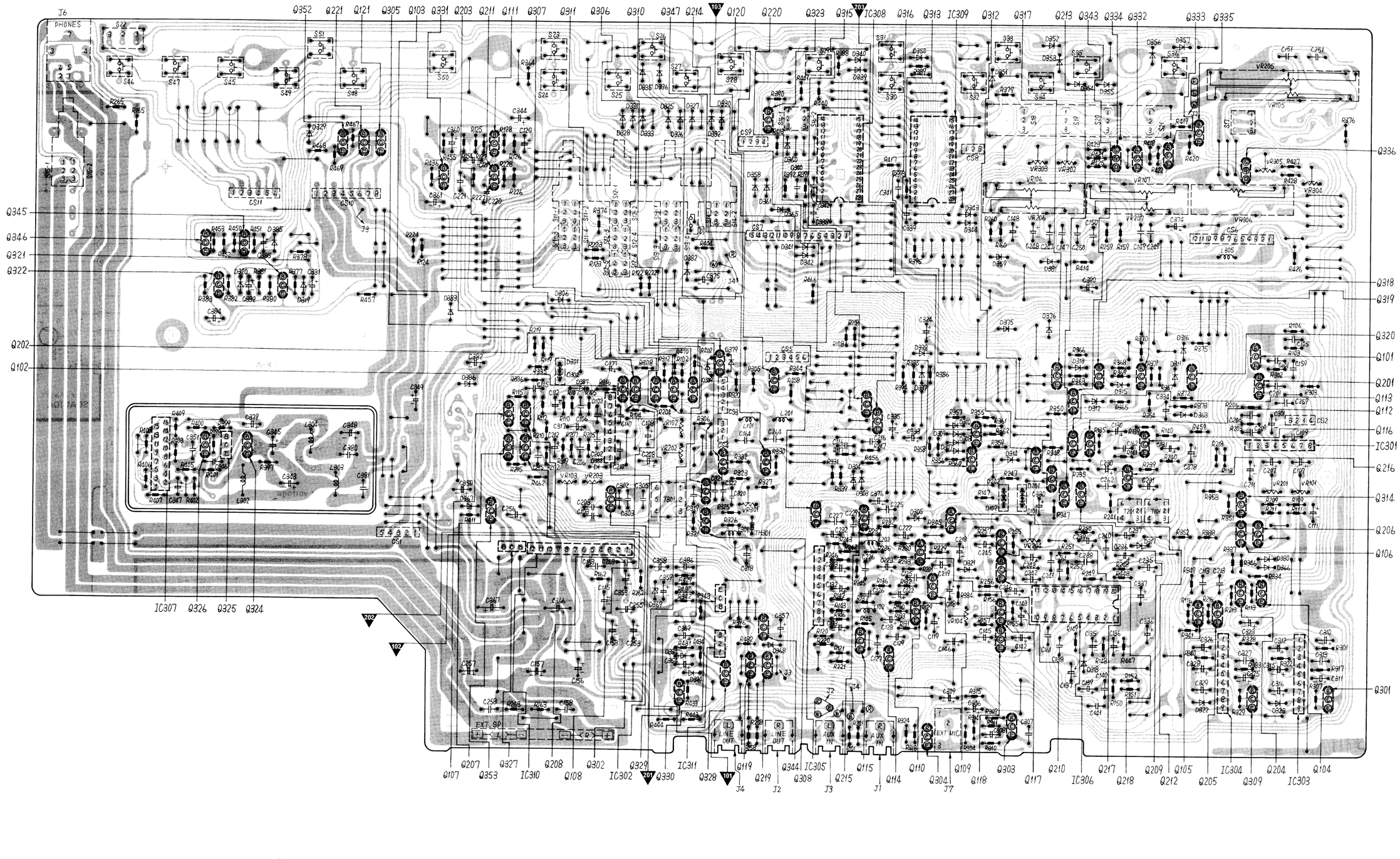
Ref. No.	Part No.
C 1, 2, 8, 11, 14, 35, 36	ECKD1H102MD
C 3	ECCD1H040C
C 5, 37	ECCD1H180KC
C 6	ECCD1H150KC
C 7	ECCD1H470KC
C 9	ECCD1H050DC
C 10, 15, 19	ECFT1E223MD
C 12	ECEA1HU2R2
C 13, 18, 21	ECFT1E103MD
C 16	ECCD1H331K
C 17	ECEA0JU470
C 20	ECKD1H472MD
C 22, 27, 28, 30	ECEA1HU010
C 23, 24	ECFT1E333MD
C 25	ECFT1E153MD
C 26	ECQP2A102JZ
C 29	ECEA1HU0R1
C 31, 32	ECQP2A332JZ
C 33	ECEA1CU100
C 34	ECKD1H103MD
C 101, 159, 201, 259	RCBS1H331KB
C 102, 351	ECKD1H681KB
C 103, 110, 209, 210	ECCD1H101K
C 105, 106, 205, 206	ECQG1H103KZ
C 107, 108, 207, 208, 301, 317, 331, 338, 382, 385	ECEA0JU470
C 109, 161, 203, 261	RCBS1H101KB
C 111, 112, 122, 131, 142, 143, 146, 211, 212, 222, 231, 242, 243, 246, 306, 316, 329, 347	ECEA1EU4R7
C 113, 127, 213, 227	ECFT1C223KD
C 115, 215	ECFT1C153KD
C 116, 125, 151, 216, 225, 251	RCBS1H102KB
C 118, 130, 153, 218, 230, 253, 308, 311, 325, 357	ECEA1HU010
C 119, 136, 145, 219, 236, 245, 310, 323	ECEA1HU0R1
C 120, 121, 132, 137, 220, 221, 232, 237	ECEA1HUR33
C 123, 135, 139, 223, 235, 239, 315, 324, 328, 330, 333, 335, 372, 374, 375, 384	ECEA1CU100
C 126, 140, 226, 240	RCBS1C472KX
C 129, 229	ECQG1H822KZ
C 133, 152, 233, 252, 312, 326	ECEA1HUR22
C 138, 238	ECQG1H473KZ
C 141, 241	ECQG1H333KZ
C 147, 247, 319	ECFT1C473MD
C 148, 248, 344	ECEA1HUR47
C 149, 249	RCBS1C682MXY
C 150, 250, 342	ECFT1C683MD
C 155, 255, 309, 332, 362, 383	ECEA0JU101
C 156, 256, 318, 358, 377, 378	ECEA1AU101
C 157, 257	ECEA1AU222
C 158, 258	ECQV1H224JZ
C 160, 260	RCBS1H221KB
C 162, 262, 307	ECKD1H102KB
C 163	ECKD1H471KB
C 164, 264	ECCD1H820K
C 202	RCBS1H681KB
C 302, 346, 386	RCBS1C103NY
C 303	ECQP2A152JZ
C 305	ECQP2A153JZ
C 313, 327	ECKD1H222MD
C 320, 321	RCBS1C222MX
C 322	ECFT1C103MD
C 334, 379	ECEA1AU470
C 336, 354	ECEA0JU471
C 337, 348, 349	ECEA1AU471
C 339	ECEA0JU470
C 340, 341	ECQP2A822JZ
C 343	ECEA1AFS471
C 345, 360, 361	ECEA1EU221
C 350, 359, 376	ECEA1AU221
C 353	ECEA1EU471
C 366, 367	ECEA1ESS332
C 368, 369, 370, 371	ECKD1H103ZF
C 380, 381	ECKD1H333ZF
C 901, 951	ECEA1CU101
C 902, 952	ECEA1EU3R3
C 903, 953	RCBS1C103NY
C 904, 954	RCBS1H102KB

RESISTORS

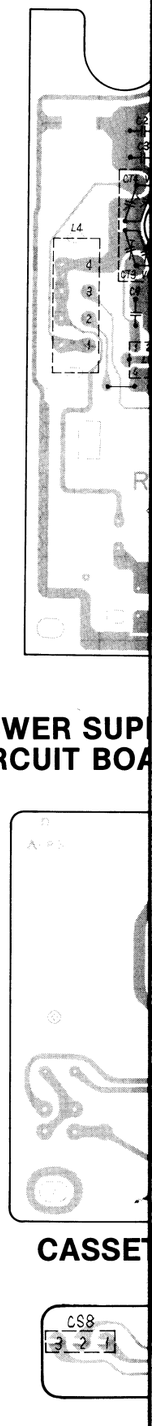
Ref. No.	Part No.
R 1, 2, 7, 19	ERDS2TJ101
R 3	ERDS2TJ100
R 4	ERDS2TJ474
R 5, 16	ERDS2TJ471
R 6	ERDS2TJ392
R 8	ERDS2TJ123
R 9	ERDS2TJ823
R 10, 11	ERDS2TJ562
R 12	ERDS2TJ821
R 13	ERDS2TJ472
R 14	ERDS2TJ822
R 15	ERDS2TJ273
R 17, 18	ERDS2TJ682
R 101, 201, 408	ERDS2TJ393
R 102, 108, 113, 115, 133, 152, 161, 202, 208, 213, 215, 233, 252, 261, 301, 304, 312, 323, 325, 328, 331, 335, 336, 338, 339, 348, 350, 352, 353, 356, 357, 360, 362, 370, 373, 374, 375, 377, 380, 381, 382, 383, 392, 395, 399, 406, 417, 418, 419, 445, 449, 455	ERDS2TJ472
R 103, 105, 203, 205	ERDS2TJ123
R 104, 204	ERDS2TJ100
R 106, 107, 206, 207, 462	ERDS2TJ334
R 109, 110, 156, 157, 159, 209, 210, 256, 257, 259, 302, 303, 317, 320, 324, 333, 343, 349, 351, 358, 359, 361, 363, 366, 367, 368, 371, 372, 378, 385, 386, 389, 402, 404, 405, 413, 414, 420, 422, 425, 426, 431, 436, 443, 444	ERDS2TJ103
R 111, 112, 211, 212, 330	ERDS2TJ392
R 116, 140, 146, 216, 240, 246, 326, 469	ERDS2TJ272
R 117, 217	ERDS2TJ153
R 118, 119, 148, 218, 219, 248	ERDS2TJ683
R 120, 220, 376	ERDS2TJ682
R 121, 129, 221, 229, 342, 391, 393, 433	ERDS2TJ333
R 122, 222, 332, 345, 355, 364, 394, 396, 411, 457, 459	ERDS2TJ222
R 123, 223	ERDS2TJ183
R 124, 224	ERDS2TJ182
R 125, 139, 225, 239, 309, 421, 427	ERDS2TJ105
R 126, 226	ERDS2TJ224
R 127, 151, 227, 251, 311, 314, 315, 327, 334, 337, 341, 346, 401, 409, 467, 468	ERDS2TJ332
R 128, 142, 228, 242, 387, 412	ERDS2TJ331
R 130, 230	ERDS2TJ684
R 131, 231, 307, 308, 329	ERDS2TJ821
R 132, 135, 143, 158, 160, 232, 235, 243, 258, 260, 305, 316, 318, 319, 344, 354, 365, 369, 384, 446	ERDS2TJ102
R 136, 236, 390, 432, 434	ERDS2TJ104
R 137, 237	ERDS2TJ680
R 141, 162, 165, 241, 262, 265, 398	ERDS2TJ151
R 145, 245, 397, 430, 466	ERDS2TJ471
R 147, 150, 247, 250, 450	ERDS2TJ473
R 149, 249	ERDS2TJ274
R 155, 255	ERDS2TJ822
R 163, 263	ERDS2TJ2R2
R 306, 321	ERDS2TJ1R0
R 310	ERDS2TJ470
R 322, 340, 451	ERDS2TJ154
R 347	ERD25VJ106
R 379, 440, 441, 458	ERDS2TJ101
R 388, 442, 456	ERDS2TJ681
R 400, 447, 448	ERDS2TJ122
R 403, 407, 423, 428	ERDS2TJ223
R 429, 454	ERDS2TJ221
R 452, 453	ERDS2TJ474
R 901, 902, 903, 951, 952, 953	ERDS2TJ471
R 904, 954, 955, 956	ERDS2TJ472
R 905, 957	ERDS2TJ103

CIRCUIT BOARD

MAIN CIRCUIT BOARD



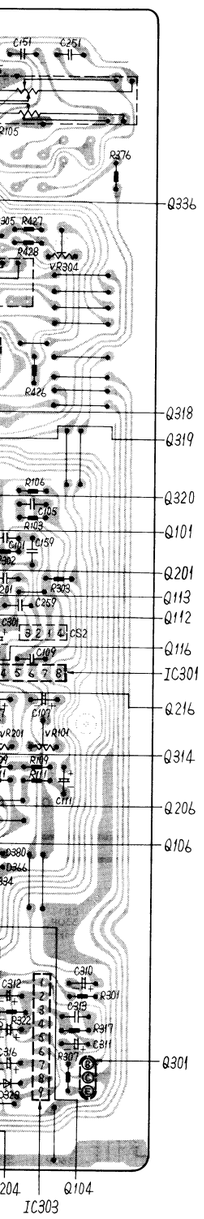
TUNER C



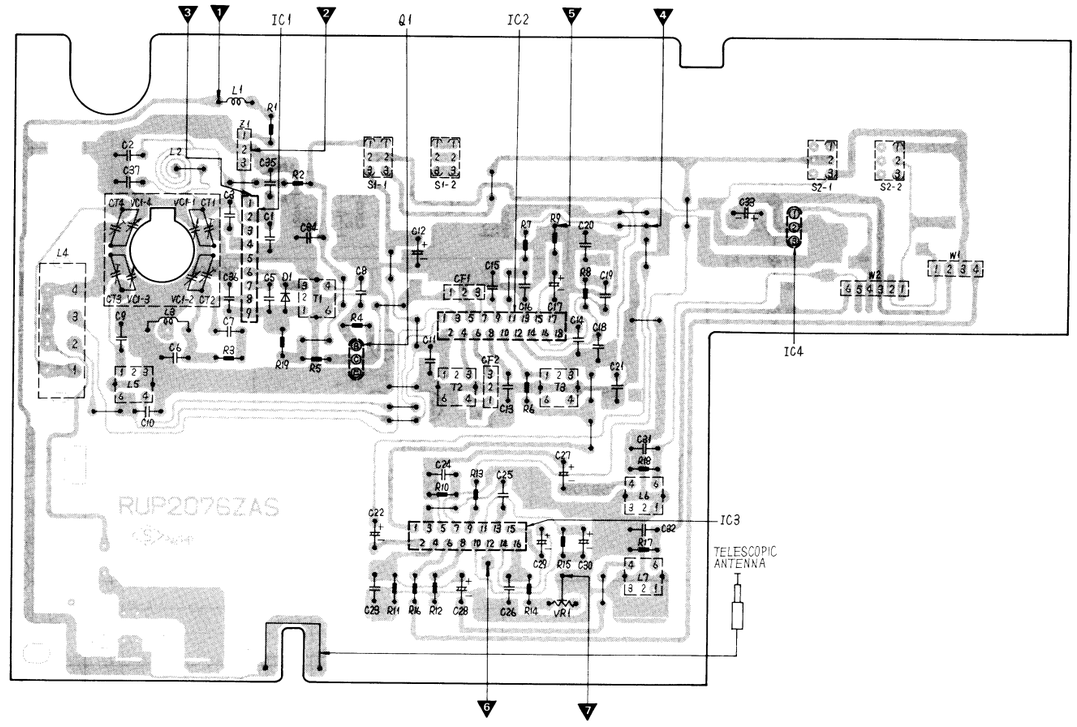
POWER SUP
CIRCUIT BOA

CASSE

12 13 14 15 16 17 18 19 20 21 22 23 24 25

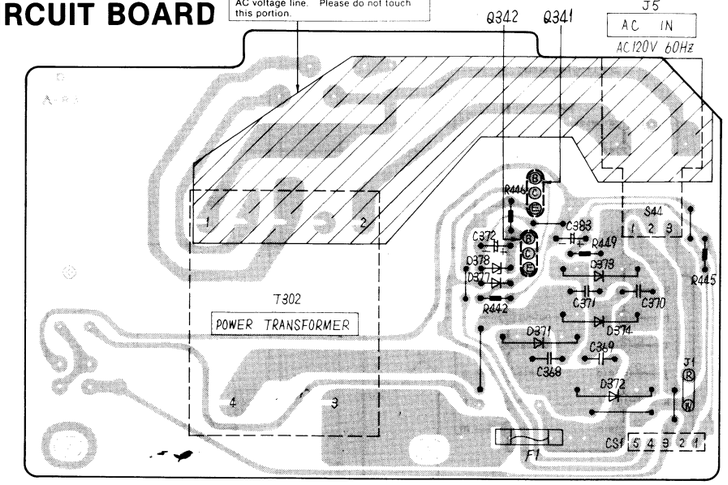


TUNER CIRCUIT BOARD

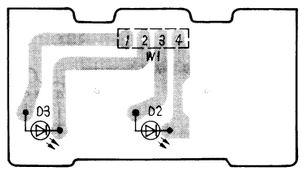


POWER SUPPLY CIRCUIT BOARD

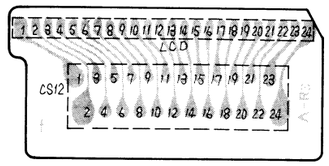
CAUTION
RISK OF ELECTRIC SHOCK
AC voltage line. Please do not touch this portion.



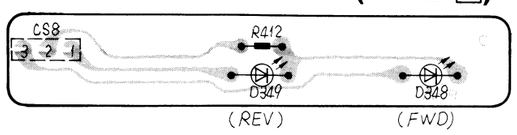
LED CIRCUIT BOARD



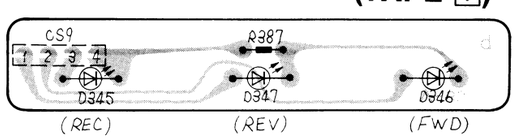
LCD CIRCUIT BOARD



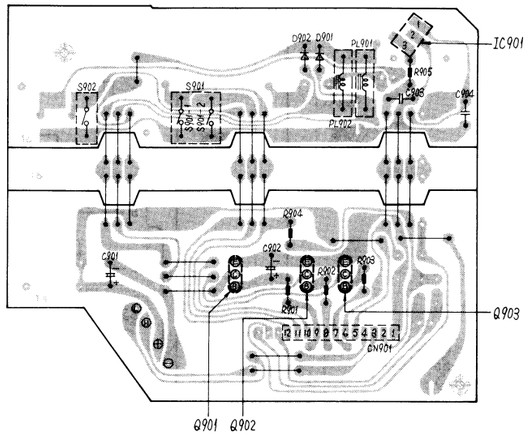
CASSETTE LID CIRCUIT BOARD (TAPE 2)



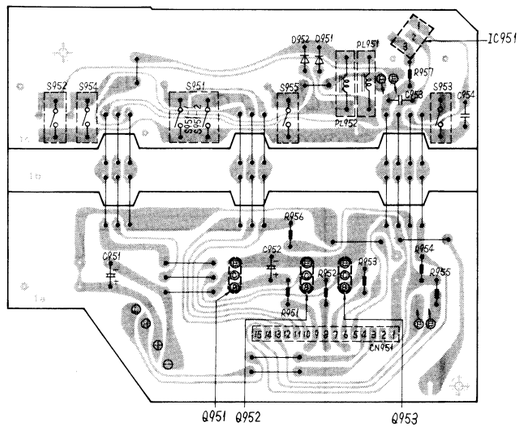
CASSETTE LID CIRCUIT BOARD (TAPE 1)

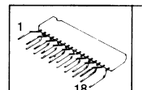
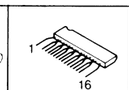
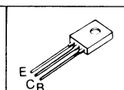
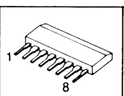
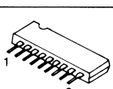
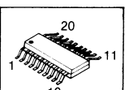
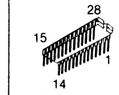
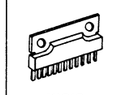
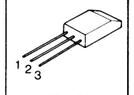
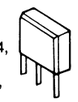
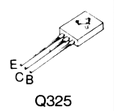
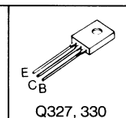
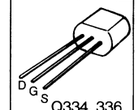
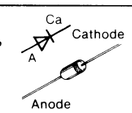
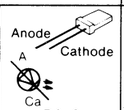
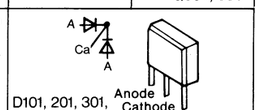
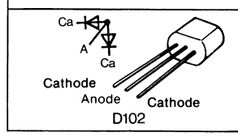
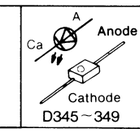
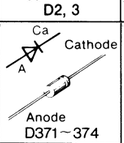


MECHANISM CIRCUIT BOARD (TAPE 2)



MECHANISM CIRCUIT BOARD (TAPE 1)



 IC1, 3	 IC2, 307	 IC4, 311	 IC301, 302	 IC303, 304	IC305	 IC306
 IC308, 309	 IC310	 IC901, 951	Q1, 103, 111, 116, 203, 211, 216, 303, 305, 324, 326, 341, 901, 951			
Q101, 102, 104~110, 112~115, 117~121, 201, 202, 204~210, 212~215, 217~221, 301, 302, 304, 306~323, 328, 329, 331~333, 335, 342~347, 352, 353, 902, 903, 952, 953 			 Q325	 Q327, 330	 Q334, 336	
D1, 303~344, 350~361, 363, 365, 366~369, 375~383, 385~389, 901, 902, 951, 952 			 D2, 3	 D101, 201, 301, 302		
 D102	 D345~349	 D371~374				

■ SCHEMATIC DIAGRAM (This schematic diagram may be modified at any time with the development of new technology.)

DIGITAL CIRCUIT SECTION

SERVO C

LCD401 Liquid Cristal Display

IC401 MN15845PDA4

System control/ LCD Drive

IC402 MN1280R

Reset signal generation

IC702 AN8005

IC601 MN6617 Digital signal processing

IC301 AN8371S and PLL Data slice

IC602 MN4416S-12 16K RAM

IC201 AN1393S

Tracking error det.

Constant voltage/ power save

D/A Converter IC801 SVIPCM55HP

IC804 SVIμPD4053G

IC803 SVINJM4566

Key switch

D401~403 MA151WK

D404 MA151A

2SB709

2SD601

2SB956

2SB709

Muting relay drive

Deglitch

LASER ON/OFF, OPEN/CLOSE DET.

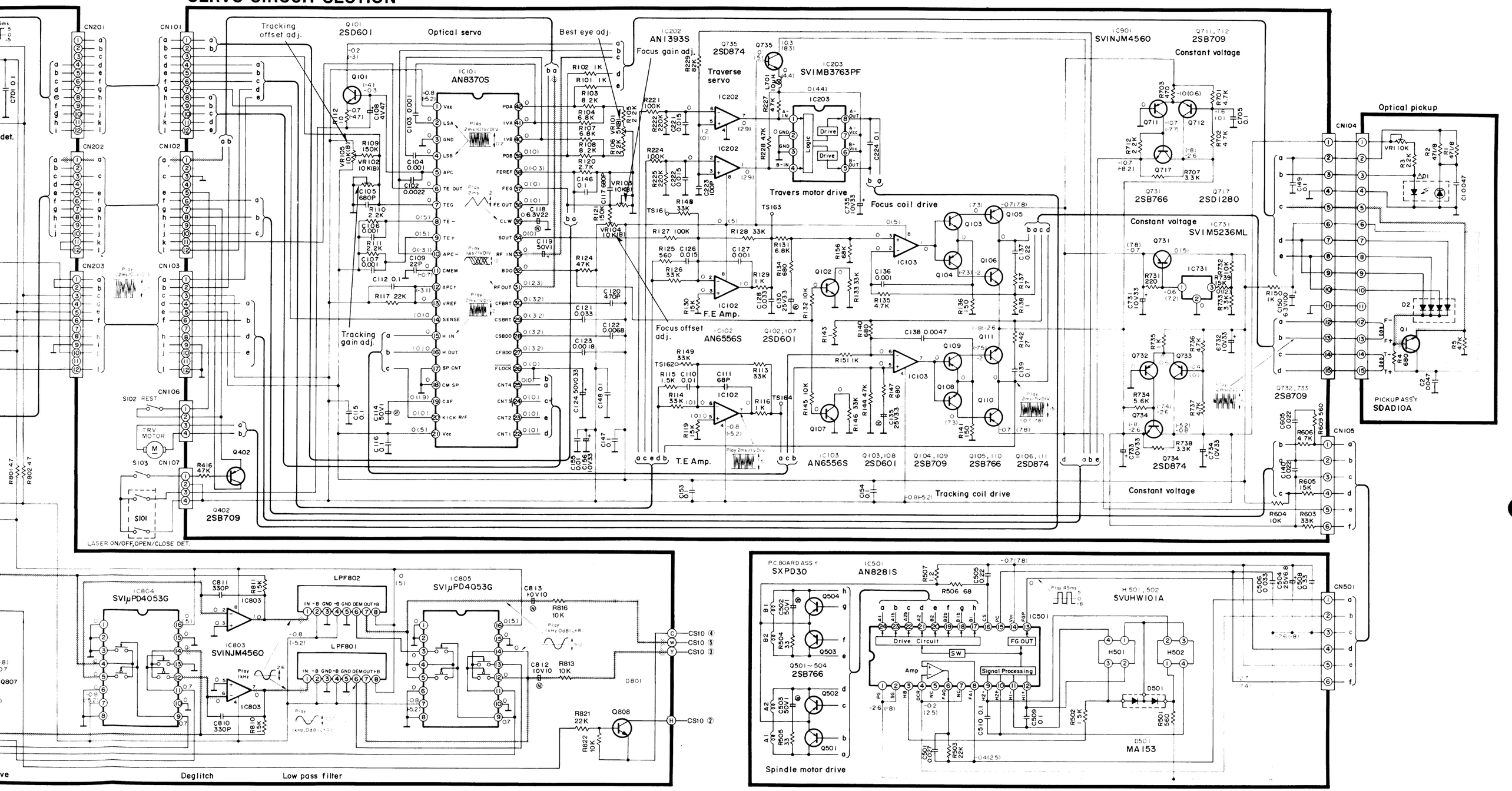
Notes:

1. ——— : Positive voltage lines and negative voltage lines.
2. ····· : Audio signal lines

2. Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.

12 13 14 15 16 17 18 19 20 21 22 23 24 25

SERVO CIRCUIT SECTION



Notes: (for Schematic Diagram)

1. **S101** : Laser ON/OFF switch in "**off**" position.
   (It turns "**on**" with disc holder closed.)
2. **S102** : Rest switch in "**off**" position.
   (It turns "**on**" when optical pickup comes to innermost periphery.)
3. **S401** : Play/pause switch.
4. **S402** : Memory/recall switch.
5. **S403** : Skip/search (Forward) switch.
6. **S404** : Skip/search (Backward) switch.
7. **S405** : Stop/clear switch.
8. **S406** : Remain time switch.
9. **S407** : Repeat switch.
10. **S701** : Power switch in "**on**" position.
11. **S901** : High filter switch in "**on**" position.
12. The voltage value and waveforms are the reference voltage of this unit measured by DC electronic voltmeter (high impedance) and oscilloscope on the basis of GND terminal.
    Accordingly, there may arise some error in the voltage values and waveforms depending upon the internal impedance of the tester or measuring unit.
    * The parenthesized is the voltage for test disc (1 kHz, L + R, 0 dB) in play mode, and the other, for no disc in stop mode.

* Caution !

IC and LSI are sensitive to static electricity.
Secondary trouble can be prevented by taking care during repair.
* Cover the parts boxes made of plastics with aluminum foil.
* Ground the soldering iron.
* Put a conductive mat on the work table.
* Do not touch the legs of IC or LSI with the fingers directly.

■ RESISTORS AND CAPACITORS

Notes: 1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. Important safety notice: Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
3. The " S " mark is service standard parts and may differ from production parts.
4. Unless otherwise specified.
All resistors are in OHMS (Ω) K = 1000Ω, M = 1000kΩ
All capacitors are in MICORFARADS (μF) P = 10^{-6} μF.

Numbering System of Resistor

Example

ERJ	6	GMY	J	102	[ ]
Type	Wattage (1/16W)	Sharpe	Tolerance (± 5%)	Value (1kΩ)	Special use

Type	Wattage	Tolerance
ERJ : Chip Type Carbon	6 : 1/16W 8 : 1/8W	J : ± 5% K : ± 10%

Numbering System of Capacitor

Example

ECUV	1H	102	K	C
Type	Voltage (50V)	Value (0.001μF)	Tolerance (± 10%)	Peculiarity

ECEA	0G	KS	470	L
Type	Voltage (4V DC)	Peculiarity use	Value (47μF)	Special use

GR426	B	273	K	25
Type	Peculiarity	Value (0.027μF)	Tolerance (± 10%)	Voltage (25V)

Type	Voltage	Tolerance
ECEA : Electrolytic ECEA...N : Non-Polar Electroltyic ECEV...N : Chip type Non-Polar Electrolytic ECSE : Chip Type Tontal ECUV, ECUX, RCUX, REUV, GR426, GR40 : Chip Type Ceramic RCBS : Ceramic (Axial Type)	**ECEA, ECSE, ECEV Types** 0G : 4V 0J : 6.3V 1A : 10V 1C : 16V 1E : 25V 1V : 35V 1H : 50V **Others** 1E : 25V DC 1H : 50V DC 50 : 50V DC	F : ± 1pF J : ± 5% K : ± 10% M : ± 20% Z : $^{+80}_{-20}$%

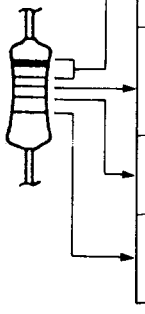
- **Indication of RCBS type capacitor (Axial type)**
- **Rated voltage**

The rated voltages are indicated by insulating paint colors.

Rated voltage (DC)	Paint color
16V	Pink
50V	Light-green

- **Electrostatic capacity and characteristics**

The nominal electrostatic capacites (PF), tolerances and temperature characteristics are indicated by color codes.



Color band	Brown	Red	Orange	Yellow	Green	Blue	Purple	Gray	White	Black	Gold	Silver
1st, 2nd color bands (Effective number of nominal electrostatic capacity)	1	2	3	4	5	6	7	8	9	0	—	—
3rd color band (Multiplier of nominal electrostatic capacity)	10^1	10^2	10^3	10^4	—	—	—	—	—	10^0	10^{-1}	10^{-2}
4th color band (Tolerances)	—	—	—	—	—	—	—	N	Z	M	J	K
5th color band (Temperature characteristic)												

• CAPACITORS

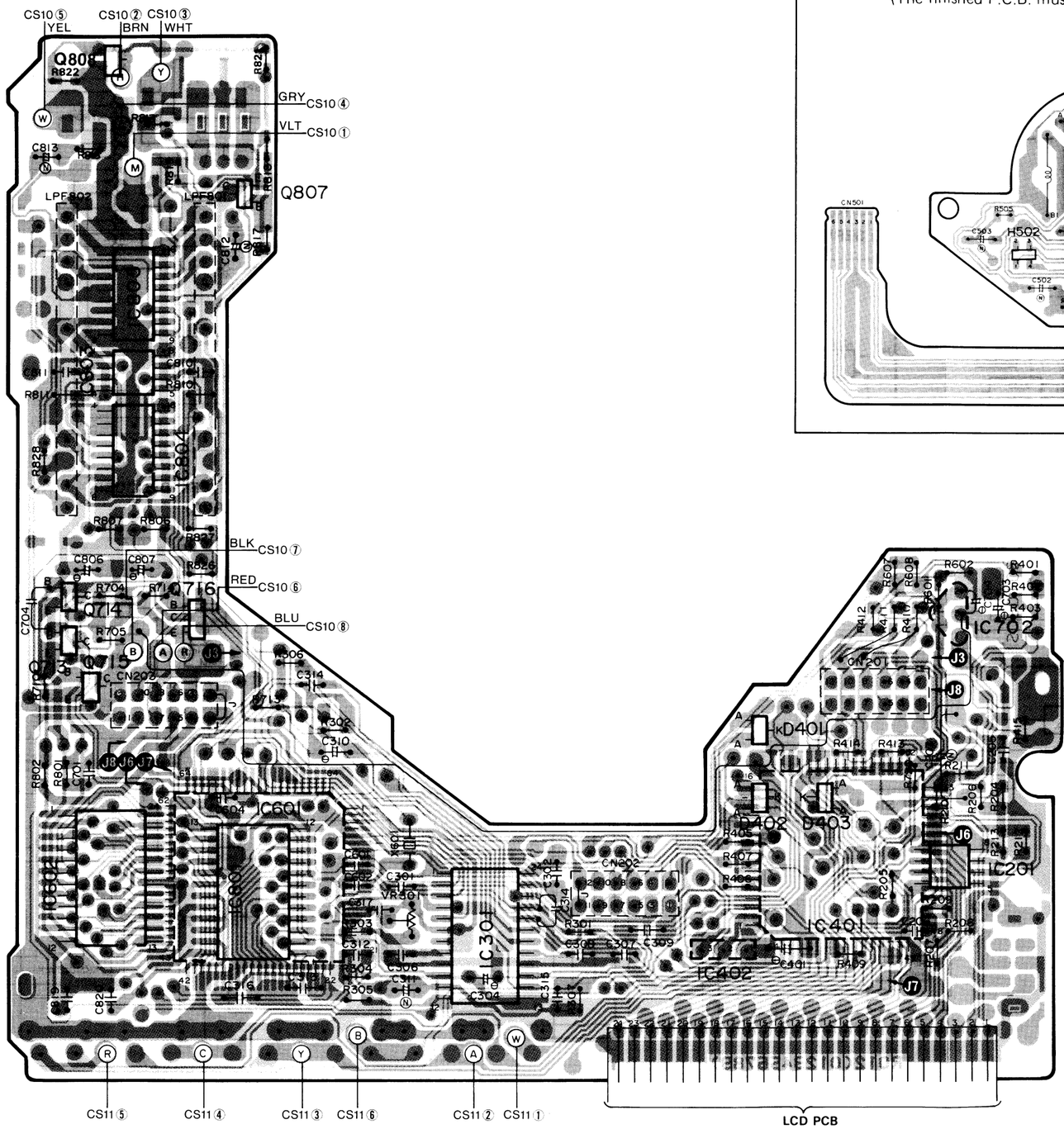
Ref. No.	Part No.	Value
C102	ECKF1H222KB	0.0022
C103, 104	ECUV1H102KC	0.001
C105	ECUX1H681KC	680 P
C106, 107	ECUV1H102KC	0.001
C108	ECSF1AZ476	47
C109	RCUX1H220KC	22 P
C110	ECUX1H103KB	0.01
C111	RCUX1H680KC	68 P
C112	RCUV1E104ZF	0.1
C114	ECEA1HSN010L	1
C115, 116	RCUV1E104ZF	0.1
C117	ECUX1H681KC	680 P
C118	ECEA0JSN220i	22
C119	ECEA1HKS010L	1
C120	RCUV1H471KC	470 P
C121	ECUX1E333KB	0.033
C122	RCUV1H682KB	0.0068
C123	RCUX1H182KB	0.0018
C124	ECEA1HKSR33L	0.33
C126	RCUV1E153KB	0.015
C127	RCUX1H102KB	0.001
C128	RCUV1E333KB	0.033
C129	ECEA1ASN330i	33
C130	ECEA1ESN3R3i	3.3
C134	ECEA1ASN330i	33
C135	ECEA1ASN100L	10
C136	RCUX1H102MB	0.001
C137	ECUV1E224ZF	0.22
C139	RCUV1E104ZF	0.1
C140	ECUX1E223MB	0.022
C146, 147	RCUV1E104ZF	0.1
C148	RCUV1E104ZF	0.1
C150	ECEA0JKS101	100
C153, 154	ECFF1H104ZF	0.1
C155	RCBC1C103NYY	0.01
C156	RCBC1C103NYY	0.01
C205	RCUV1E104ZF	0.1
C206	ECUX1E223MB	0.022
C207	ECEA1SKN3R3	3.3
C221, 222	ECUX1H153MB	0.015
C223	RCUX1H101KC	100 P
C224	RCUV1E104ZF	0.1
C301	RCUV1E104ZF	0.1
C302	ECUV1E104MD	0.1
C304	ECSE0JT685SM	6.8
C306	RCUX1H150JT	15 P
C307	ECUX1E333KB	0.033
C308	RCUX1H102MB	0.001
C309	ECUV1E104MD	0.1
C310	ECSE1CT4740R	0.47
C311	ECEA1HSN2R2i	2.2
C312	ECUX1H153KB	0.015
C313	ECUV1E104MD	0.1
C314	RCUX1H100FC	10 P
C315, 318	RCUX1H472MB	0.0047
C316	ECUV1E104MD	0.1
C317	RCUV1E104ZF	0.1
C319, 320	ECKF1H681KB	680 P
C401	ECSE0JT685SM	6.8
C402	RCUX1H103ZF	0.01
C501	GR426B273K25	0.027
C502, 503	ECEV1HN010R	1
C504	ECEV1EV6R8R	6.8
C505	GR426F224Z25	0.22
C506	GR426B333M25	0.033
C508	GR426F334Z25	0.33
C509, 510	GR40F104Z25P	0.1
C601, 602	RCUX1H100FC	10 P
C604	RCUX1H103ZF	0.01
C605	ECUX1E223MB	0.022
C606	RCBC1C103NYY	0.01
C701	RCUV1E104ZF	0.1
C703	ECSE0JT685SM	6.8
C704	ECEA0JKS470	0.1
C705	ECKF1E104ZV	0.1
C731, 732	ECEA1AKS330i	33
C733, 734	ECEA1AKS330i	33
C735	ECEA1AKS330i	33
C806, 807	ECEA0JKS470	47
C810, 811	RCUV1H331KC	330 P
C812, 813	ECEA1ASN100L	10
C819, 820	RCUV1E104ZF	0.1

• RESISTORS

Ref. No.	Part No.	Value
R101, 102	ERJ6GMYJ102M	1 K
R103	ERJ6GMYJ822M	8.2 K
R104	ERJ6GMYJ682M	6.8 K
R105, 106	ERJ6GMYJ222M	2.2 K
R107	ERJ6GMYJ682M	6.8 K
R108	ERJ6GMYJ822M	8.2 K
R109	ERJ6GMYJ154M	150 K
R110, 111	ERJ6GMYJ222M	2.2 K
R112	ERJ8GCYJ100M	10
R113, 114	ERJ6GMYJ333M	33 K
R115	ERJ6GMYJ152M	1.5 K
R116	ERJ6GMYJ102M	1 K
R117	ERJ6GMYJ223M	22 K
R119	ERJ6GMYJ153M	15 K
R120	ERJ6GMYJ272M	2.7 K
R121	ERJ6GMYJ154M	150 K
R124	ERJ6GMYJ473M	47 K
R125	ERJ6GMYJ561M	560
R126	ERJ6GMYJ333M	33 K
R127	ERJ6GMYJ104M	100 K
R128	ERJ6GMYJ333M	33 K
R129	ERJ6GMYJ102M	1 K
R130	ERJ6GMYJ153M	15 K
R131	ERJ6GMYJ682M	6.8 K
R132	ERJ6GMYJ103M	10 K
R133	ERJ6GMYJ333M	33 K
R134	ERJ6GMYJ681M	680
R135	ERJ6GMYJ472M	4.7 K
R136	ERJ6GMYJ151M	150
R137	ERJ8GCYJ270M	27
R138	ERJ8GCPK1R0M	1
R140	ERJ6GMYJ681M	680
R141	ERJ6GMYJ151M	150
R142	ERJ8GCYJ270M	27
R143	ERJ8GCPK1R0M	1
R144	ERJ6GMYJ473M	47 K
R145	ERJ6GMYJ103M	10 K
R146	ERJ6GMYJ333M	33 K
R147	ERJ6GMYJ681M	680
R148, 149	ERJ6GMYJ333M	33 K
R150, 151	ERJ6GMYJ102M	1 K
R156	ERJ6GMYJ683M	68 K
R204, 205	ERJ6GMYJ472M	4.7 K
R206	ERJ6GMYJ124M	120 K
R207, 208	ERJ6GMYJ223M	22 K
R209	ERJ6GMYJ333M	33 K
R210	ERJ6GMYJ104M	100 K
R211	ERJ6GMYJ124M	120 K
R212	ERJ6GMYJ123M	12 K
R213	ERJ6GMYJ103M	10 K
R221	ERJ6GMYJ104M	100 K
R222	ERJ6GMYJ224M	220 K
R224	ERJ6GMYJ104M	100 K
R225	ERJ6GMYJ224M	220 K
R227, 228	ERJ6GMYJ472M	4.7 K
R229	ERJ6GMYJ823M	82 K
R301	ERJ6GMYJ562M	5.6 K
R302	ERJ6GMYJ474M	470 K
R303	ERJ6GMYJ102M	1 K
R304	ERJ6GMYJ333M	33 K
R305	ERJ6GMYJ221M	220
R306	ERJ6GMYJ224M	220 K
R307	ERJ6GMYJ824M	820 K
R401, 402	ERJ6GMYJ222M	2.2 K
R403	ERJ6GMYJ222M	2.2 K
R405, 406	ERJ6GMYJ102M	1 K
R407	ERJ6GMYJ102M	1 K
R409, 410	ERJ6GMYJ472M	4.7 K
R411, 412	ERJ6GMYJ472M	4.7 K
R413, 414	ERJ6GMYJ472M	4.7 K
R416	ERJ6GMYJ473M	47 K
R501	ERJ6GEYJ561V	560
R502	ERJ6GEYJ152V	1.5 K
R503	ERJ6GEYJ223V	2.2 K
R601, 602	ERJ6GMYJ473M	47 K
R603	ERJ6GMYJ333M	33 K
R604	ERJ6GMYJ103M	10 K
R605	ERJ6GMYJ153M	15 K
R606	ERJ6GMYJ472M	4.7 K
R607	ERJ6GMYJ224M	220 K
R608	ERJ6GMYJ154M	150 K
R609	ERJ6GMYJ561M	560
R701, 702	ERJ6GMYJ472M	4.7 K
R703	ERJ8GCYJ471M	470
R704	ERJ6GMYJ332M	3.3 K
R705	ERJ6GMYJ562M	5.6 K
R707	ERJ6GMYJ332M	3.3 K
R710	ERJ6GMYJ391M	390
R712	ERJ6GMYJ222M	2.2 K
R713	ERJ6GMYJ472M	4.7 K
R714	ERJ6GMYJ222M	2.2 K
R720	ERJ6GMYJ472M	4.7 K
R731	ERJ6GMYJ221M	220
R732	ERJ6GMYJ103M	10 K
R733	ERJ6GMYJ332M	3.3 K
R734	ERJ6GMYJ562M	5.6 K
R735	ERJ6GMYJ102M	1 K
R736, 737	ERJ6GMYJ472M	4.7 K
R738	ERJ6GMYJ332M	3.3 K
R739	ERJ6GMYJ153M	15 K
R801, 802	ERJ6GMYJ4R7M	4.7
R806, 807	ERJ6GMYJ332M	3.3 K
R810, 811	ERJ6GMYJ152M	1.5 K
R813	ERJ6GMYJ103M	10 K
R816	ERJ6GMYJ103M	10 K
R817, 821	ERJ6GMYJ223M	22 K
R818, 822	ERJ6GMYJ103M	10 K
R819	ERJ6GMYJ272M	2.7 K
R826, 827	ERJ6GMYJ472M	4.7 K
R828	ERJ6GMYJ472M	4.7 K

■ CIRCUIT BOARDS

• Digital circuit



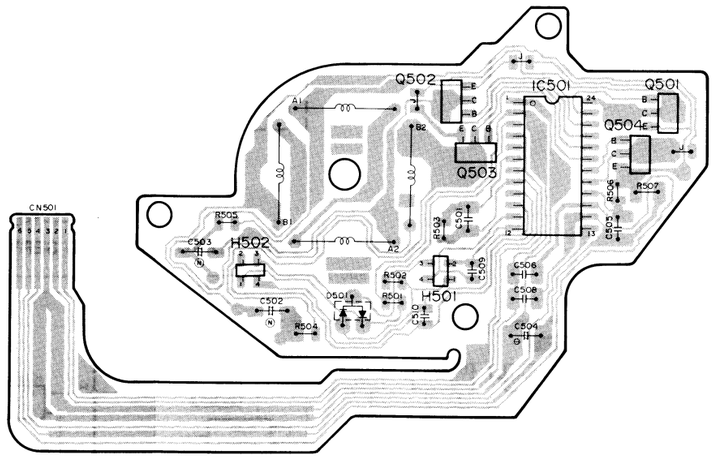
• Spindle motor drive circuit

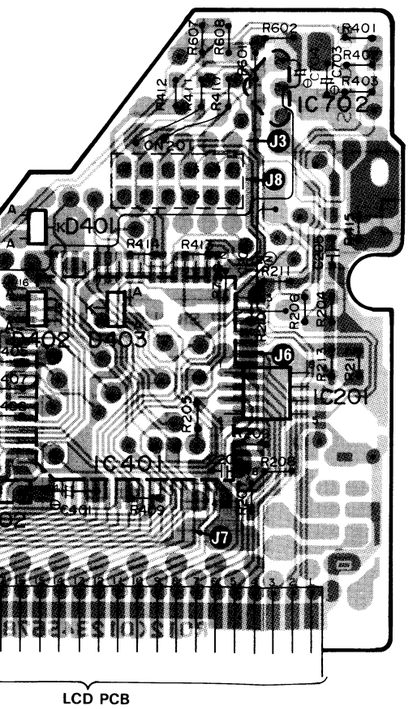
Note: 1. The spindle motor drive
and FPC. It is very diff
So, the repair parts are sup
2. Do not cut the FPC fitted
(The finished P.C.B. must

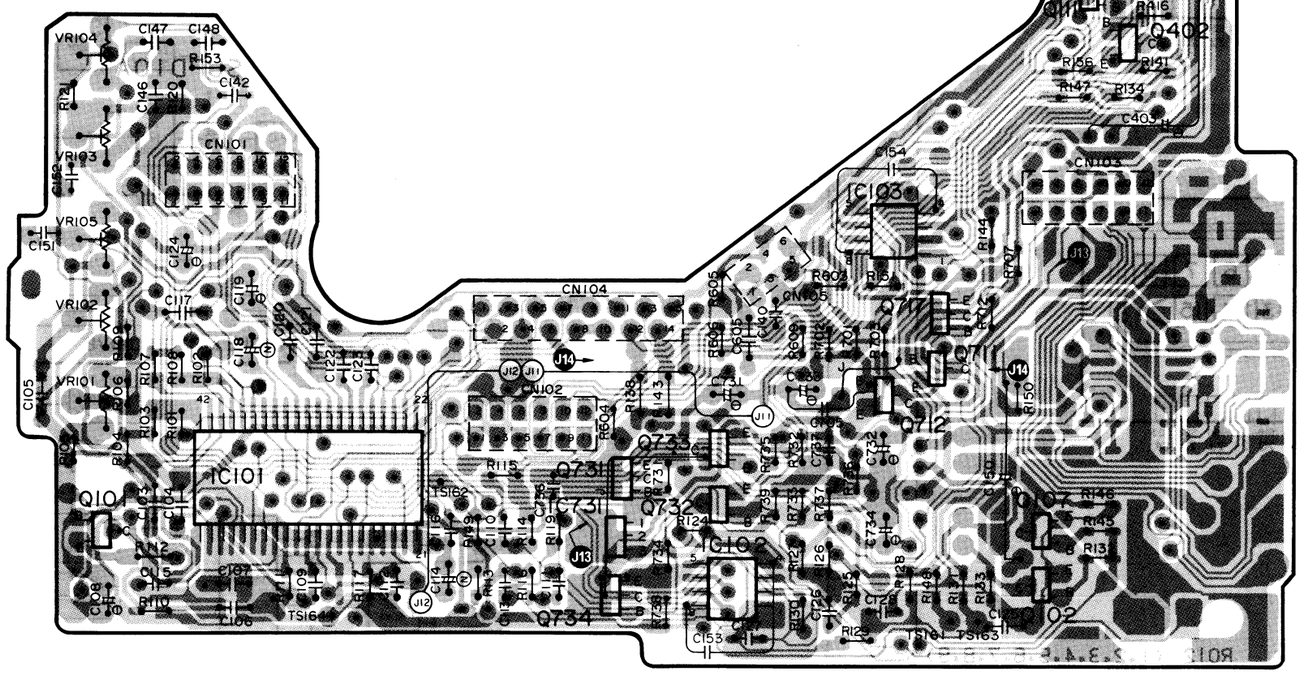
- **Spindle motor drive circuit**

Note: 1. The spindle motor drive circuit board is made by laminating iron sheet and FPC. It is very difficult to replace the parts on the circuit board. So, the repair parts are supplied in the from of finished P.C.B.

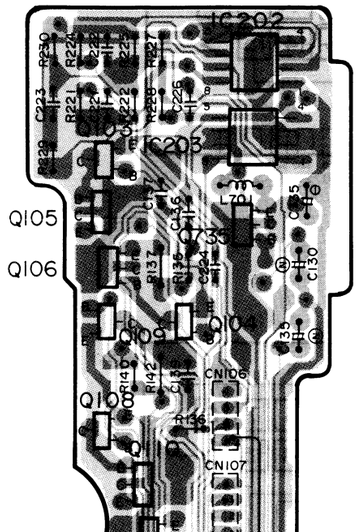
2. Do not cut the FPC fitted to the circuit board. (The finished P.C.B. must be otherwise replaced.)







- **Servo circuit**



*** Caution !**

IC and LSI are sensitive to static electricity.
Secondary trouble can be prevented by taking care during repair.
* Cover the parts boxes made of plastics with aluminum foil.
* Ground the soldering iron.
* Put a conductive mat on the work table.
* Do not touch the legs of IC or LSI with the fingers directly.

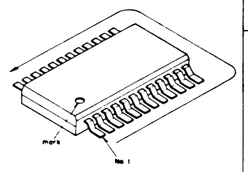
■ TERMINAL GUIDE OF IC'S, TRANSISTORS AND DIODES

SVINJM4560
SVIMB3763PF
AN6556S
AN1393S ..... 8 Pin

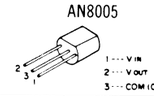
SVIUPD4053G ..... 16 Pin

SVIPCM55HP
MN4416S
AN8281S
AN8371S ..... 24 Pin

AN8370S ..... 42 Pin

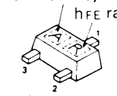


AN8005



2SB709, 2SD601

Part name symbol hFE rank

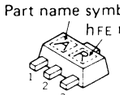


1. Collector
2. Emitter
3. Base

Part name symbol : A (2SB709) Y (2SD601)

2SB766, 2SB956
2SD874, 2SD1280

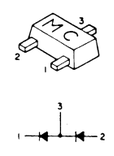
Part name symbol hFE rank



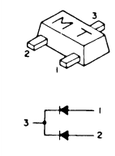
1. Base 2. Collector
3. Emitter

Part name symbol : A (2SB766) Z (2SD874) H (2SB956) R (2SD1280)

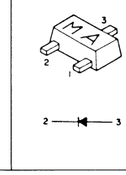
MA153



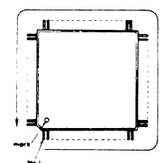
MA151WK



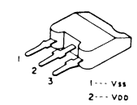
MA151A



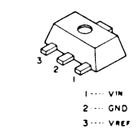
MN15845PDA ..... 64 Pin
MN6617 ..... 84 Pin



MN1280R

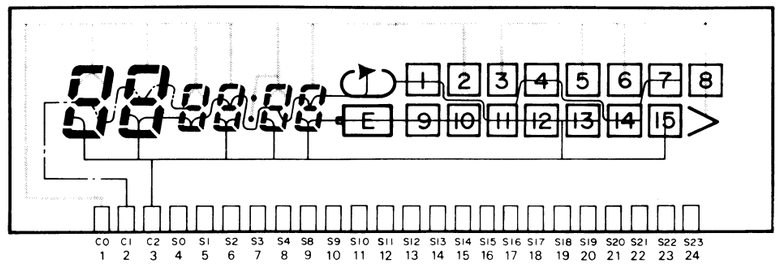


SVIM5236ML



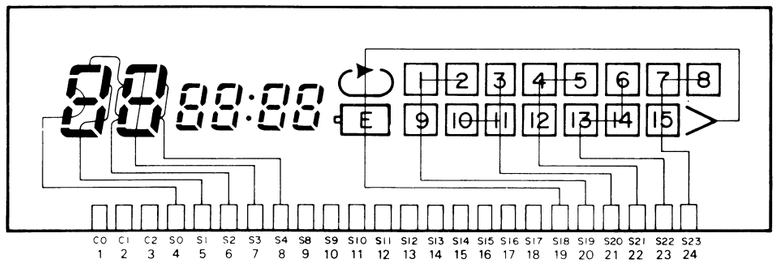
■ INTERNAL CONNECTIONS OF LCD (Liquid Crystal Display)

- **Common connection diagram**

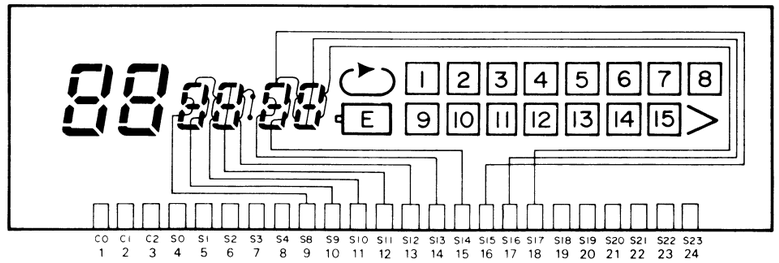


- **Segment connection diagram**

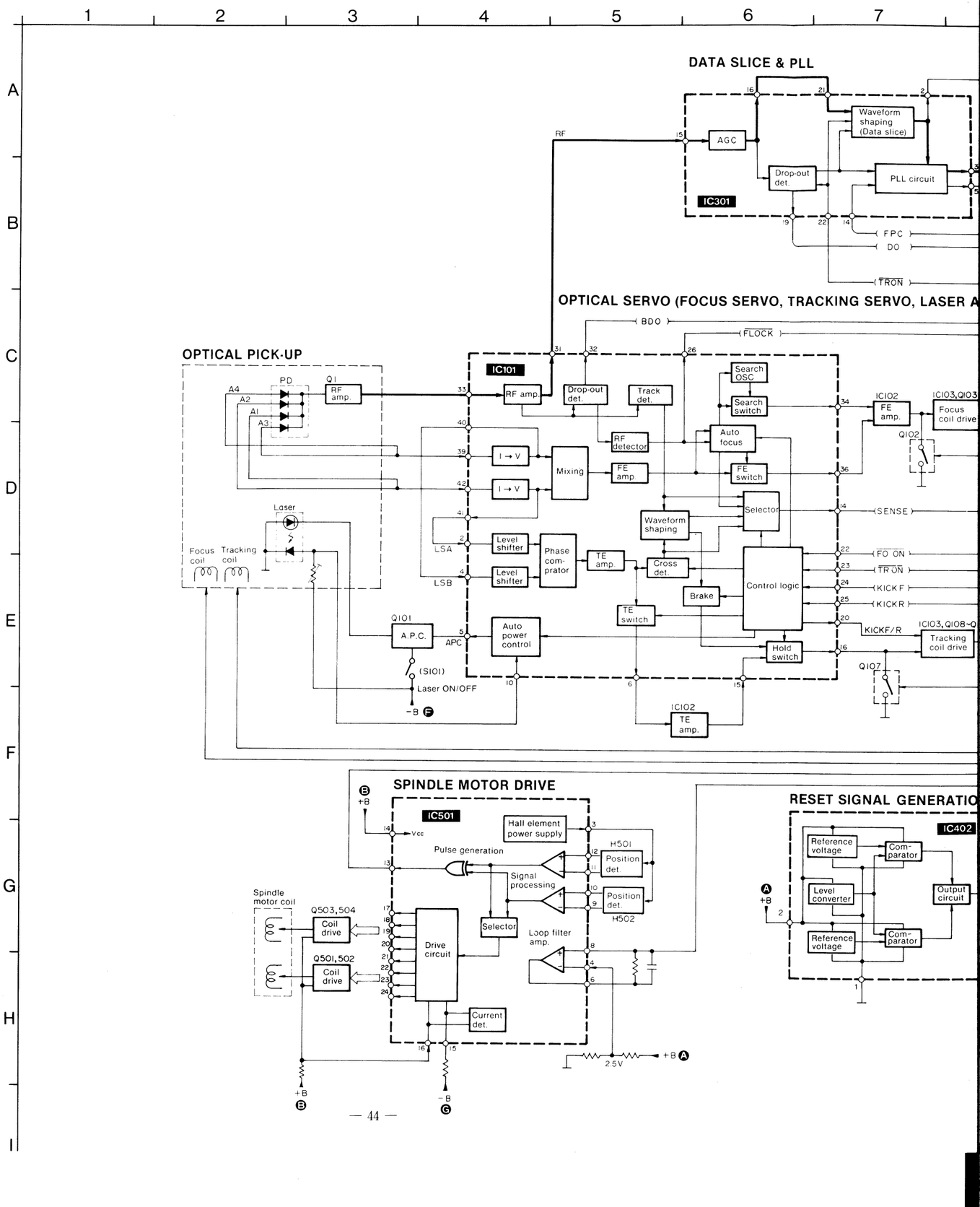
(a)



(b)



■ BLOCK DIAGRAM (CD PLAYER SECTION)



6 7 8 9 10 11 12 13 14 15 16 17 18 19

DATA SLICE & PLL

IC301
AGC
Drop-out det.
Waveform shaping (Data slice)
PLL circuit
SRF
EFM
PCK
FPC
DO
TRON

SYSTEM CONTROL & LCD DRIVE

IC401
OSC
Back up
ROM 4096X8
IR
PC
SP
Y
X
SX SY SE 256X4
LB
SBF
SB
I F
I E
CF ZF
ALU
T C
T B
BC
System control
E
A
LCD control/drive
SMCK
BLKCK
RST
CLDCK
SUBB
TCNT
+B
Common
Segment
LCD
(S102) Rest
CS11 (①~⑥)
Open/ Close det.
(S103)
MUTE
TRREV
TRFWD
POWER
TRON
(S101)
SENSE
FLOCK
MCLK
MDATA
MLD
STAT
KICKR
KICKF
FOON

TRAVERSE MOTOR DRIVE

IC203
IC202 Traverse servo
Logic
Drive
Drive
Traverse motor

IC201 Tracking error amount det.

Q1, IC101, IC102, IC103, IC201, IC202, IC801, IC301, IC803 - 805, LPF801, 802

Q105, Q110, IC501, IC901

+B 7.8V
+B 5V
Regu-lator Q731, IC731
Q713, 714, 716
IC203 +B 4.4V
Regu-lator Q735
Power save Q715
IC702 Regu-lator
−5.2V
Regu-lator Q732 734
−B
S101, IC101 103, IC201, IC301, IC801, IC803 805, LPF801, 802
−8V
Regu-lator Q711 712 717
−8.2V
Q809 −B
Q106, Q111, IC501, IC901
CS10 ⑧
CS10 ⑥
CS10 ⑦

CONSTANT VOLTAGE CIRCUIT

+B 5V
Q807, IC401, IC402, IC601, IC602

D (FOCUS SERVO, TRACKING SERVO, LASER A.P.C.)

FLOCK
Search OSC
Search switch
Auto focus
FE switch
Selector
Brake
Control logic
Hold switch
IC102 FE amp.
IC103, Q103~Q106 Focus coil drive
Q102
SENSE
FO ON
TR ON
KICKF
KICKR
IC103, Q108~Q111 Tracking coil drive
KICKF/R
TRV
Q107
IC102 TE amp.

DIGITAL SIGNAL PROCESSING (EFM DECODER, ERROR CORRECTION, CLV SERVO)

IC60
FPC
EFM
PCK
CLDCK
BLKCK
SUBQ
EMPHA
SRF
EC
Synchronize det.
EFM frequency det.
Synchronize protection
EFM decoder
PCK timing
Sub-code decoder
Rough servo
Severe servo
CLV control
Syndro me
CCU
Warking RAM
ALU
Compen sation
RAM address generation
Process ing
MCK timing
Track counter
Interface
16 bit data
Address
MUTE
WE
OE
+B
FG
DO
TRON
X601
16.9344 MHz
SMCK
RST
STAT
MDATA
MCLK
MLD
RDG
LDG

16KRAM

IC602
Row decoder
Memory array
Input data control
Colum I/O circuits
Colum decoder
Chip select, write enable, output buffer control

AUDIO CIRCUIT

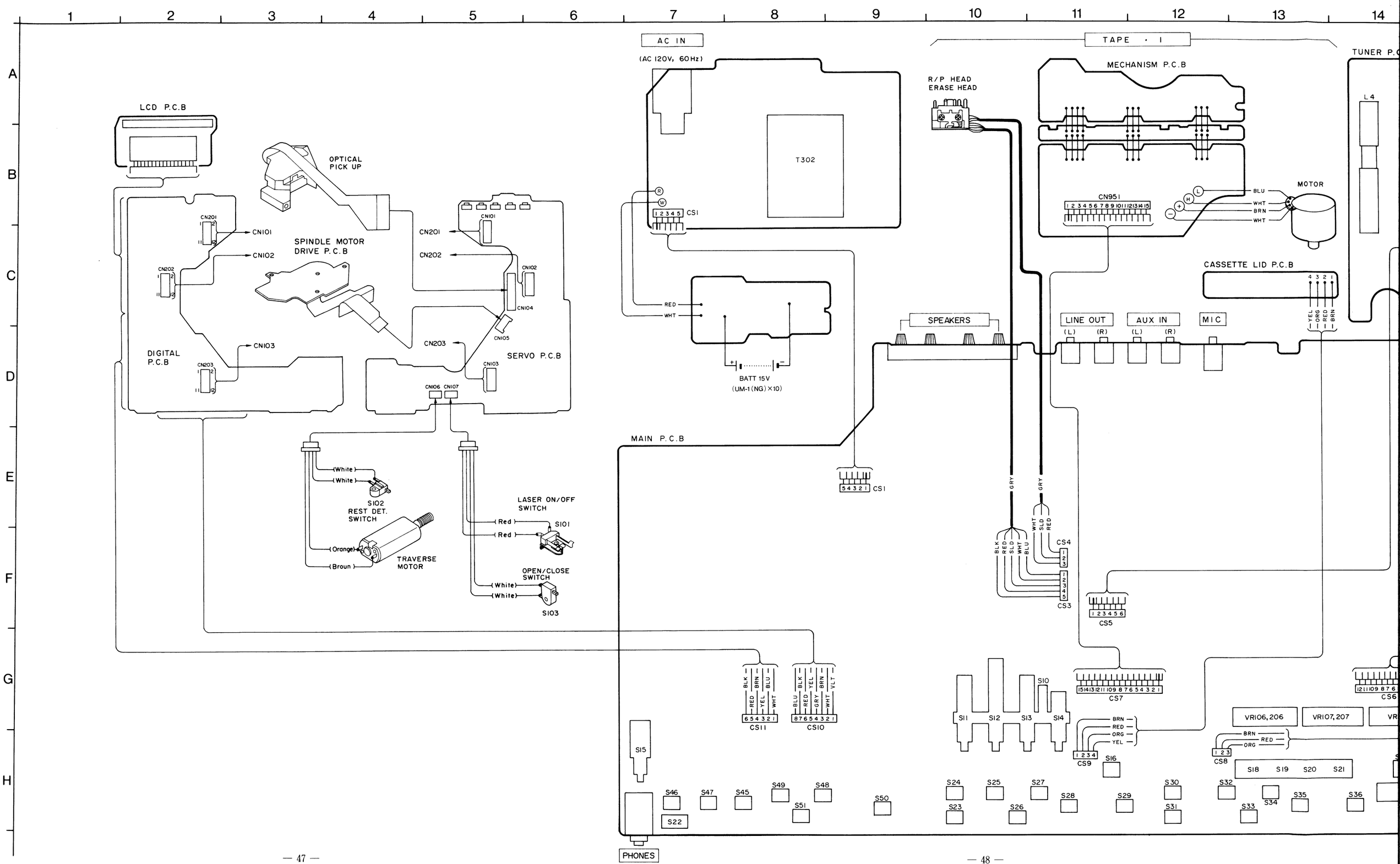
D/A CONVERTER

IC801
Ladder resistor network
I→V
IC803, 804 Deglitch
LPF801 L.P.F.
LPF802 L.P.F.
IC805 De-emphasis selector
RL801 Muting relay
Q807 Muting relay drive
Muting
CS10 ③
CS10 ⑤
CS10 ④
CS10 ②
CS10 ①

RESET SIGNAL GENERATION

IC402
Reference voltage
Com-parator
Level converter
Output circuit
Reference voltage
Com-parator
+B

WIRING CONNECTION DIAGRAM



WIRING CONNECTION DIAGRAM

6 7 8 9 10 11 12 13 14 15 16 17 18 19

AC IN
(AC 120V, 60Hz)
T302
CS1
RED
WHT
BATT 15V
(UM-1(NG)×10)
MAIN P.C.B
PHONES
SPEAKERS
TAPE • 1
R/P HEAD
ERASE HEAD
MECHANISM P.C.B
CN951
MOTOR
BLU
WHT
BRN
WHT
CASSETTE LID P.C.B
YEL ORG RED BRN
LINE OUT (L) (R)
AUX IN (L) (R)
MIC
TUNER P.C.B
L4
LED P.C.B
W1
W2
S1-1 S1-2
S2-1 S2-2
(AM) (FM)
BAND
MONO/II ST/I
FM MODE/B.P
TAPE • 2
PLAYBACK HEAD
CS2
CS3
CS4
CS5
CS6
CS7
CS8
CS9
CS10
CS11
S10 S11 S12 S13 S14
S15 S16 S17
S18 S19 S20 S21
S22 S23 S24 S25 S26 S27 S28 S29 S30 S31 S32 S33 S34 S35 S36
S45 S46 S47 S48 S49 S50 S51
VR106,206
VR107,207
VR306
VR105,205
CN901
MOTOR
BLU
WHT
BRN
WHT
CASSETTE LID P.C.B
ORG
RED
BRN
S101
S103
SER ON/OFF
WITCH
PEN/CLOSE
SWITCH

RX-CD70 RX-CD70

■ TERMINAL FUNCTION OF LSI

• MN6617 (Digital Signal Processing : EFM Decoder, Error Correction, CLV Servo)

Pin No.	Mark	I/O Devision	Function
1	BLKCK	O	Sub-code block (Q data) clock (75 Hz)
2	$\overline{\text{CLDCK}}$	O	Sub-code frame (Q data) clock (7.35 kHz)
3	$\overline{\text{SUBQ}}$	O	Sub-code (Q data) output
4	CRC	O	Sub-code (Q data) CRC check (not used, open)
5	$\overline{\text{RST}}$	I	Reset signal input (reset at "L")
6	MLD	I	Data input (Command load)
7	MCLK	I	Data clock input (Command clock)
8	MDATA	I	Data input (Command data)
9	DMUTE	I	Muting control (muting ON at "H")
10	$\overline{\text{TRON}}$	I	Tracking servo ON signal (tracking servo ON at "L")
11	STAT	O	Processing condition (CRC, OTC, CLVOK, TT STOP) output
12	SMCK	O	Clock output (4.2336 MHz)
13	PMCK	O	Pitch control clock output (not used, open)
14	ITC	I	Track counter input signal (not used, connected to +5V)
15	$\overline{\text{TEST}}$	I	Test mode selection (not used, connected to +5V)
16	X2	O	Clock output (16.9334 MHz)
17	X1	I	Clock input (16.9344 MHz)
18	SEL	I	DA output parallel/serial selection (parallel at "H")
19	LDG	O	L channel deglitch signal
20	RDG	O	R channel deglitch signal
21	DEMPH	O	De-emphasis ON signal (de-emphasis ON at "H")
22	IPFLAG	O	Interpolation flag (interpolation at "H")
23	FLAG0	O	Error flag (error at "H")
24	FLAG6	O	16 K RAM address reset signal (reset at "H")
25	XCK	O	Clock (16.9334 MHz) output (not used, open)
26 ∫ 30	DA15 ∫ DA11	O	16-bit data output (DA15 : MSB)
31	GND	I	GND terminal
32 ∫ 42	DA10 ∫ DA 0	O	16-bit data output (DA0 : LSB)
43 ∫ 50	D7 ∫ D0	I/O	16 K RAM data output
51	RAMOE	O	16 K RAM $\overline{\text{OE}}$ signal
52	RAMWE	O	16 K RAM $\overline{\text{WE}}$ signal
53 ∫ 63	RAMA 0 ∫ RAMA10	O	16 K RAM address signal (RAMA0 : LSB, RAMA10 : MSB)
64	PC	O	Spindle motor ON signal (ON at "L")
65	EC	O	Spindle motor drive signal
66	FG	I	Spindle motor FG signal input
67	——	——	——
68	——	——	——
69	——	——	——
70	——	——	——
71	——	——	——
72	PCK	I	PLL extract clock input (4.2336 MHz)
73	VDD	I	Power supply (connected to +5V)
74	EFM	I	EFM signal input (PLL)
75	SRF	I	EFM signal input (DSL)
76	DO	I	Drop-out signal (Drop-out at "H")
77	CLVS	O	11T stereo OK signal (OK at "H")
78	FPC	O	PLL frequency comparision signal
79	BSSEL	O	PLL frequency in take operation signal
80	——	——	——
81	——	——	——
82	——	——	——
83	SUBC	O	Sub-code serial output data (not used, open)
84	SBCK	I	Clock for sub-code serial output (not used, connected to GND)

• AN8370S (Optical Servo Control)

Pin No.	Mark	I/O Devision	Function
1	VEE	I	Power supply (connected to –5V)
2	LSA	I	Phase difference input (A)
3	GND	I	GND terminal
4	LSB	I	Phase difference input (B)
5	APC	O	Auto laser power control output
6	TEOUT	O	Tracking error signal output
7	TEG	I	Tracking error gain adjusting input
8	TE–	I	Phase difference-voltage conversion (–)
9	TE +	I	Phase difference-voltage conversion (+)
10	APC –	O	Laser power inversion input
11	C·MEM	I	Capacitor connection for phase difference memory
12	APC +	I	Laser power non-inversion input
13	VREF	O	Reference current generation
14	SENSE	O	Selector output (track-crossed)
15	HIN	I	Tracking hold circuit input
16	HOUT	O	Tracking hold circuit output
17	SPCNT	O	Track-cross speed control output (not used, grounded)
18	C·MSP	I	Track-cross reference speed setting capacitor connection (not used, grounded)
19	C·AF	I	Auto focus timer capacitor connection
20	KICK R/$\overline{\text{F}}$	O	Track kick signal output
21	VCC	I	Power supply (connected to +5V)
22	CNT1	I	Control input ($\overline{\text{FOON}}$: Focus servo ON signal)
23	CNT2	I	Control input ($\overline{\text{TRON}}$: Tracking servo ON signal)
24	CNT3	I	Control input (KICKF : Kick direction [forward] command)
25	CNT4	I	Control input (KICKR : Kick direction [reverse] command)
26	$\overline{\text{F·LOCK}}$	O	Focus lock signal output
27	C·FBDO	O	Capacitor connection for inversion RF high speed detection
28	C·SBDO	O	Capacitor connection for inversion RF low speed detection
29	C·SBRT	O	Capacitor connection for non-inversion RF low speed detection
30	C· FBRT	O	Capacitor connection for non-inversion RF high speed detection
31	RF OUT	O	RF signal output
32	BDO	O	Drop-out detection output
33	RFIN	I	RF signal input
34	S·OUT	O	Focus search signal output
35	C·LW	I	Capacitor connection for triangular wave generation
36	FE·OUT	O	Focus error signal output
37	FEG	I	Focus error gain adjusting input
38	FE·REF	I	Focus error comparison voltage generation
39	PDB	I	Photo detector current input (B)
40	IVB	O	Current/voltage conversion output (B)
41	IVA	O	Current/voltage conversion output (A)
42	PDA	I	Photo detector current input (A)

• AN8371S (Data Slice and PLL)

Pin No.	Mark	I/O Devision	Function
1	VEE	I	Power supply (connected to –5V)
2	SRF	O	RF signal output data-sliced into digital value
3	EFM	O	EFM signal output synchronized with PCK
4	D·GND	I	GND terminal (digital system)
5	PCK	O	Clock output extracted from SRF
6	VCC	I	Power supply (connected to +5V)
7	VA	I	VCO free ran frequency adjusting current input
8	VC1	I	Capacitor connection for VCO oscillation frequency
9	VC2	I	Capacitor connection for VCO oscillation frequency
10	VR	I	Resistor connection for VCO oscillation frequency
11	PD	I	Capacitor connection for PLL DO protection
12	PL1	I	PLL loop filter constant connection
13	PL2	I	PLL loop filter constant connection
14	FPC	I	Frequency comparison error signal input.
15	RF	I	RF signal input
16	ARF	O	RF signal output with AGC applied
17	AGC	I	ARF signal input for AGF drop-out detection
18	AC	I	AGC loop filter constant connection
19	DO	O	Drop-out detection pulse output
20	A·GND	I	GND terminal (analog system)
21	DSL	I	RF signal input for data slicer
22	SLC	I	Slice level control signal input
23	FC1	I	Data slicer filter capacitor connection
24	FC2	I	Data slicer filter capacitor connection

• MN15845PDA

Pin No.	Mark	S
1	VDD	V
2	OSC1	O
3	OSC 2	—
4	X1	T
5	X0	—
6	$\overline{\text{RST}}$	R
7	$\overline{\text{SYNC}}$	—
8	$\overline{\text{IRQ}}$	B
9	$\overline{\text{SIRQ}}$	—
10	$\overline{\text{SBI}}$	S
11	$\overline{\text{SBO}}$	—
12	$\overline{\text{SBT}}$	C
13 ∫ 16	P40 ∫ P43	—
17	P00	M
18	P01	M
19	P02	T
20	P03	M
21	P10	S
22	P11	R
23	P12	T

• AN8281S (Spi

Pin No.	Mark	F
1	PG	
2	SG	
3	HB	
4	DCR	
5	NC	
6	FAO	
7	NC	
8	FAI	
9	H2 –	
10	H2 +	
11	H1 –	

• AN8370S (Optical Servo Control)

Pin No.	Mark	I/O Devision	Function
1	VEE	I	Power supply (connected to –5V)
2	LSA	I	Phase difference input (A)
3	GND	I	GND terminal
4	LSB	I	Phase difference input (B)
5	APC	O	Auto laser power control output
6	TEOUT	O	Tracking error signal output
7	TEG	I	Tracking error gain adjusting input
8	TE–	I	Phase difference-voltage conversion (–)
9	TE +	I	Phase difference-voltage conversion (+)
10	APC –	O	Laser power inversion input
11	C·MEM	I	Capacitor connection for phase difference memory
12	APC +	I	Laser power non-inversion input
13	VREF	O	Reference current generation
14	SENSE	O	Selector output (track-crossed)
15	HIN	I	Tracking hold circuit input
16	HOUT	O	Tracking hold circuit output
17	SPCNT	O	Track-cross speed control output (not used, grounded)
18	C·MSP	I	Track-cross reference speed setting capacitor connection (not used, grounded)
19	C·AF	I	Auto focus timer capacitor connection
20	KICK R/$\overline{F}$	O	Track kick signal output
21	VCC	I	Power supply (connected to +5V)
22	CNT1	I	Control input ($\overline{FOON}$: Focus servo ON signal)
23	CNT2	I	Control input ($\overline{TRON}$: Tracking servo ON signal)
24	CNT3	I	Control input (KICKF : Kick direction [forward] command)
25	CNT4	I	Control input (KICKR : Kick direction [reverse] command)
26	$\overline{F\cdot LOCK}$	O	Focus lock signal output
27	C·FBDO	O	Capacitor connection for inversion RF high speed detection
28	C·SBDO	O	Capacitor connection for inversion RF low speed detection
29	C·SBRT	O	Capacitor connection for non-inversion RF low speed detection
30	C· FBRT	O	Capacitor connection for non-inversion RF high speed detection
31	RF OUT	O	RF signal output
32	BDO	O	Drop-out detection output
33	RFIN	I	RF signal input
34	S·OUT	O	Focus search signal output
35	C·LW	I	Capacitor connection for triangular wave generation
36	FE·OUT	O	Focus error signal output
37	FEG	I	Focus error gain adjusting input
38	FE·REF	I	Focus error comparison voltage generation
39	PDB	I	Photo detector current input (B)
40	IVB	O	Current/voltage conversion output (B)
41	IVA	O	Current/voltage conversion output (A)
42	PDA	I	Photo detector current input (A)

• AN8371S (Data Slice and PLL)

Pin No.	Mark	I/O Devision	Function
1	VEE	I	Power supply (connected to –5V)
2	SRF	O	RF signal output data-sliced into digital value
3	EFM	O	EFM signal output synchronized with PCK
4	D·GND	I	GND terminal (digital system)
5	PCK	O	Clock output extracted from SRF
6	VCC	I	Power supply (connected to +5V)
7	VA	I	VCO free ran frequency adjusting current input
8	VC1	I	Capacitor connection for VCO oscillation frequency
9	VC2	I	Capacitor connection for VCO oscillation frequency
10	VR	I	Resistor connection for VCO oscillation frequency
11	PD	I	Capacitor connection for PLL DO protection
12	PL1	I	PLL loop filter constant connection
13	PL2	I	PLL loop filter constant connection
14	FPC	I	Frequency comparison error signal input.
15	RF	I	RF signal input
16	ARF	O	RF signal output with AGC applied
17	AGC	I	ARF signal input for AGF drop-out detection
18	AC	I	AGC loop filter constant connection
19	DO	O	Drop-out detection pulse output
20	A·GND	I	GND terminal (analog system)
21	DSL	I	RF signal input for data slicer
22	SLC	I	Slice level control signal input
23	FC1	I	Data slicer filter capacitor connection
24	FC2	I	Data slicer filter capacitor connection

• MN15845PDA (System Control)

Pin No.	Mark	Signal	I/O Devision	Function
1	VDD	VDD	I	Power supply (connected to +5V)
2	OSC1	OSC	I	Clock input (4.2336 MHz)
3	OSC 2	——	O	Not used (open)
4	X1	TCNT	I	Track count input (track-cross input in rough search)
5	X0	——	O	Not used (open)
6	$\overline{RST}$	$\overline{RESET}$	I	Reset signal input (reset at "L")
7	$\overline{SYNC}$	——	O	Not used (open)
8	$\overline{IRQ}$	BLKCK	I	Q data read-in timing strobe signal input (sub-code block clock : 75 Hz)
9	$\overline{SIRQ}$	——	I	Not used. (connected to VDD)
10	$\overline{SBI}$	$\overline{SUBQ}$	I	Q data read-in input (sub-code Q code)
11	$\overline{SBO}$	——	O	Not used (open)
12	$\overline{SBT}$	$\overline{CLDCK}$	I	Q data read-in data strobe signal input (sub-code block clock : 7.35 kHz)
13 ~ 16	P40 ~ P43	——	I	Key input
17	P00	MCLK	I/O	Key input strobe and data clock output
18	P01	MDATA	I/O	Key input strobe and data output
19	P02	$\overline{TEST}$	I/O	Key input strobe and tracking error read-in strobe output
20	P03	MLD	O	Data strobe signal output (signal processing LSI command load output)
21	P10	$\overline{SENSE}$	I	Optical servo status (track-cross) input
22	P11	$\overline{FLOCK}$	I	Optical servo status (focus) input.
23	P12	TEDET	I	Traverse tracking error detection signal input
24	P13	STAT	I	Processing status input from signal processing LSI
25	P20	CNT4	O	Optical servo IC control signal (KICKR : Kick direction [revers] command)
26	P21	CNT3	O	Optical servo IC control signal (KICKF : Kick direction [forward] command)
27	P22	CNT2	O	Optical servo IC control signal ($\overline{TRON}$: Track servo)
28	P23	CNT1	O	Optical servo IC control signal ($\overline{FOON}$: Focus servo)
29	P30	POWER	O	Power save control (power save at "H")
30	P31	TRFWD	O	Traverse motor forward command signal
31	P32	TRREV	O	Traverse motor revers command signal
32	P33	MUTE	O	Muting control (muting ON at "H")
33	VLCD 1	——	I	LCD drive power supply (3.33V)
34	VLCD2	——	I	LCD drive power supply (1.67V)
35	VLCD3	——	I	LCD drive power supply (0V)
36 ~ 38	COM0 ~ COM2	——	O	LCD common line output
39	COM3	——	O	Not used (open)
40 ~ 44	SEG0 ~ SEG4	——	O	LCD segment line output
45 ~ 47	SEG5 ~ SEG7	——	O	Not used (open)
48 ~ 63	SEG8 ~ SEG23	——	O	LCD segment line output
64	VSS	GND	I	GND terminal.

• AN8281S (Spindle Motor Drive)

Pin No.	Mark	I/O Devision	Function
1	PG	I	GND terminal (for power supply)
2	SG	I	GND terminal (for signal)
3	HB	O	Hall element bias voltage output (7.5V)
4	DCR	I	Reference voltage input (2.5V)
5	NC	——	Not used.
6	FAO	O	Loop filter constant connection
7	NC	——	Not used.
8	FAI	I	Loop filter constant connection and control signal input
9	H2 –	I	Hall element's Hall voltage input (inversion)
10	H2 +	I	Hall element's Hall voltage input (non-inversion)
11	H1 –	I	Hall element's Hall voltage input (inversion)
12	H1 +	I	Hall element's Hall voltage input (non-inversion)
13	FGP	O	FG pulse output.
14	VCC	I	Power supply (connected to +7.5V)
15	PC	I	Capacitor connection for phase compensation and motor drive command input.
16	CS	O	Current detection
17 ~ 24	B1 ~ A1	O	Spindle motor drive output

• TC9312N017, TC9312N018 (Mechanism Control)

1) Termination

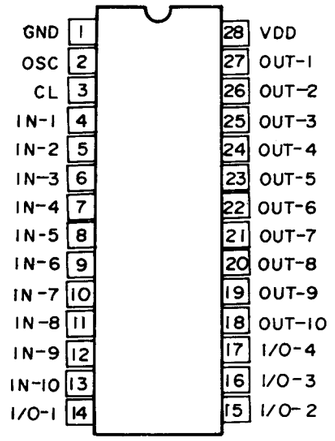


Fig. 1

M: 2.5V

Level	Blank Skip	TPS
L	○	○
M	×	○
H	×	×

Fig. 2

2) Block Diagram

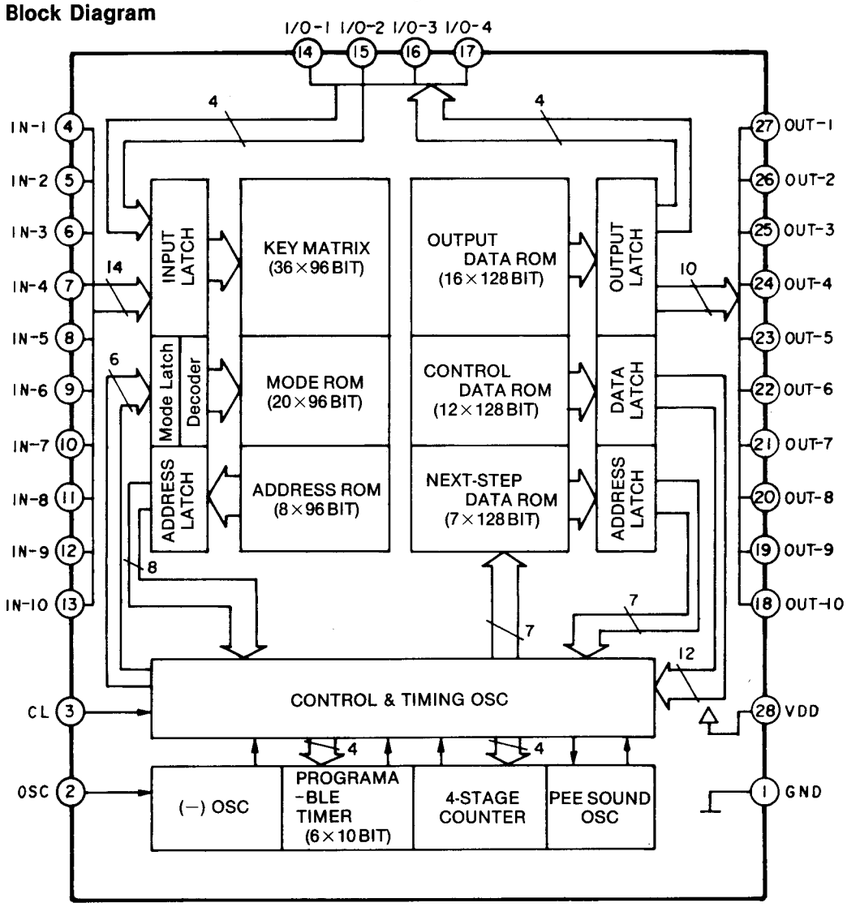


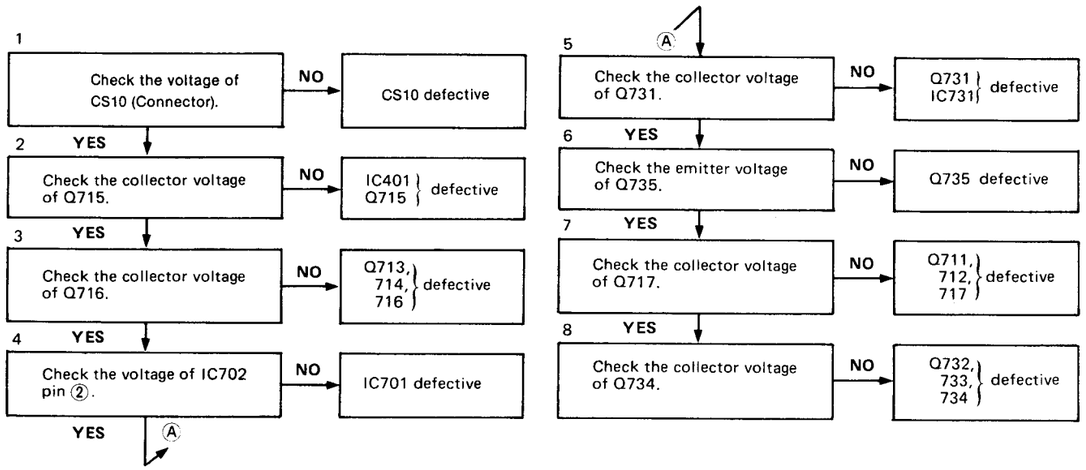
Fig. 3

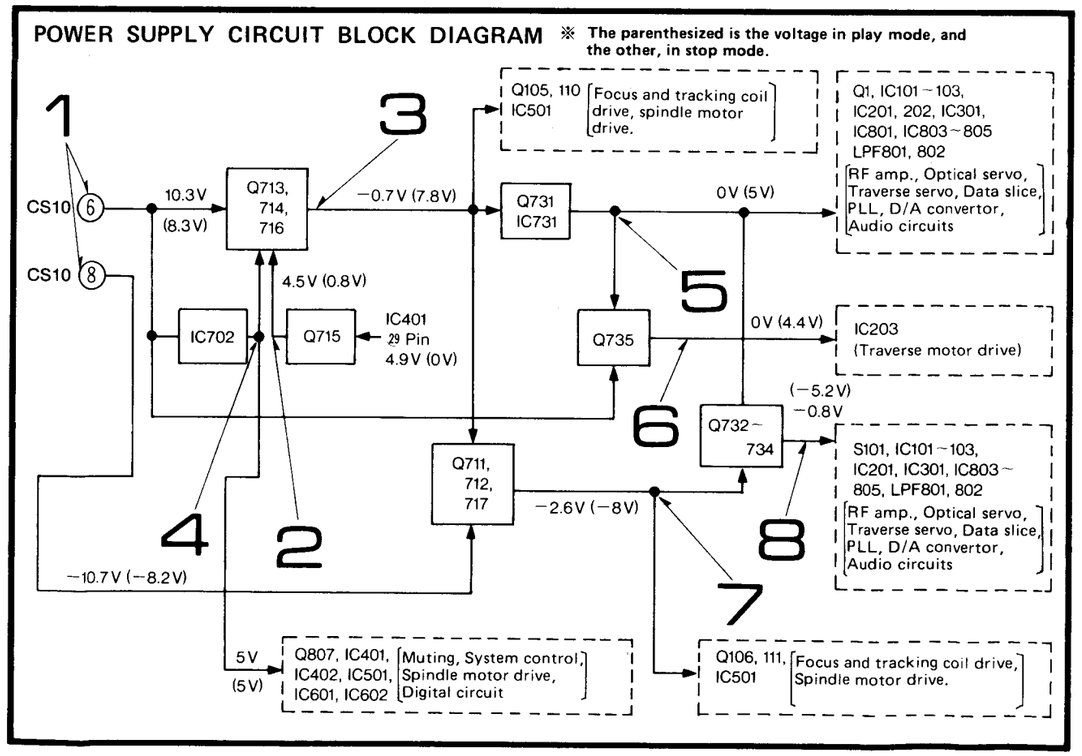
Pin No.	Pin Name	Function IC308 (TC9312N018)	Function IC309 (TC9312N017)	Description IC308 (TC9312N018)	Description IC309 (TC9312N017)
1	GND	GND		Ground	
2	OSC	Clock oscillator		Approx. 64kHz	
3	CL	Clear		Resets the operation when the power supply voltage drops (3.5V).	
4	IN-1	FF/REW		FF/REW mode switch detection: "L" during FF/REW mode.	
5	IN-2	PLAY SW		PLAY mode switch detection: "L" during PLAY and REC mode.	
6	IN-3	REV REC	Key input	REV REC mode detection: "H" during REV REC mode.	Input for FWD PLAY and REW.
7	IN-4	FWD REC	Key input	FWD REC mode detection: "H" during FWD REC mode.	Input for REV PLAY, FF and STOP.
8	IN-5	Key input	TPS input	Input for FWD PLAY and STOP.	"L" during use signal and "H" during no signal.
9	IN-6	Key input		Input for REV PLAY and STOP.	Input for High Dubbing, FF, STOP.
10	IN-7	Key input		Input for REW and FF.	Input for Dubbing, REW and Dubbing STOP.
11	IN-8	REV mode		⇄ : "H", ⊃ : "M", ⟲ : "H", ∞ : "M", Syncro Reverse : "H" "M" :2.5V	
12	IN-9	Mode		Blank skip/TPS (refer to Fig. 2.)	
13	IN-10	Auto-Stop		Rotation of the reel table (with ring magnets) is detected with the Hall IC (DN6851A) to determine the end of tape. Square wave output in PLAY, FF, REW, TPS.	
14	I/O-1	Key input	Key OK	Input for REC-Standby and FF.	Key INH input: Key inputs are accepted when "H".
15	I/O-2	TPS input	Dubbing OK	"L" during use signal and "H" during no signal.	Dubbing starts when "L".
16	I/O-3	Dubbing S/S	Relay	"H" when dubbing starts; "L" (momentary) during synchro-reverse.	Tape [1] starts when the relay play input is "L".
17	I/O-4	Key-INH.	Relay SW	Inhibits the key input for tape [1]. "L" when tape [2] starts operating.	Relay play switch. Relay play when "L".
18	OUT-10	Timer	Relay	Mode setting for the timer standby.	"L" when relay play from tape [1] to tape [2].
19	OUT-9	Relay	Key-INH.	"L" when relay play from tape [2] to tape [1].	Inhibits the key input for tape [2]. ("L" when tape [1] starts operating)
20	OUT-8	REV LED	Dubbing S/S	"L" during FWD PLAY; "H" during REV PLAY. Alternates repidly between "L" and "H" during TPS.	"H" when dubbing starts; "L" (momentary) during syncroreverse.
21	OUT-7	FWD LED		"H" during FWD PLAY; "L" during REV PLAY. Alternates repidly between "H" and "L" during TPS.	
22		REC LED	REV LED	"H" during REC mode.	"L" during FWD PLAY; "H" during REV PLAY. Alternates repidly between "H" and "L" during TPS.
23	OUT-5	DMT		"L" during audio muting PLAY/REC STANDBY.	
24	OUT-4	Compalsory normal	High speed	"H" during synchro-reverse or start of high speed dubbing.	"H" during high speed dubbing.
25	OUT-3	CAP Motor		"L" during STOP; otherwise "H".	
26	OUT-2	PLAY PL		Play plunger drive. Momentary "H" when switching the PLAY, REC, and TPS operations.	
27	OUT-1	FF/REW PL		FF/REW plunger drive. Momentary "H" when switching the FF, REW, and TPS operations.	
28	VDD	Power supply		Approx. 5V.	

■ TROUBLESHOOTING (for CD Player Section)

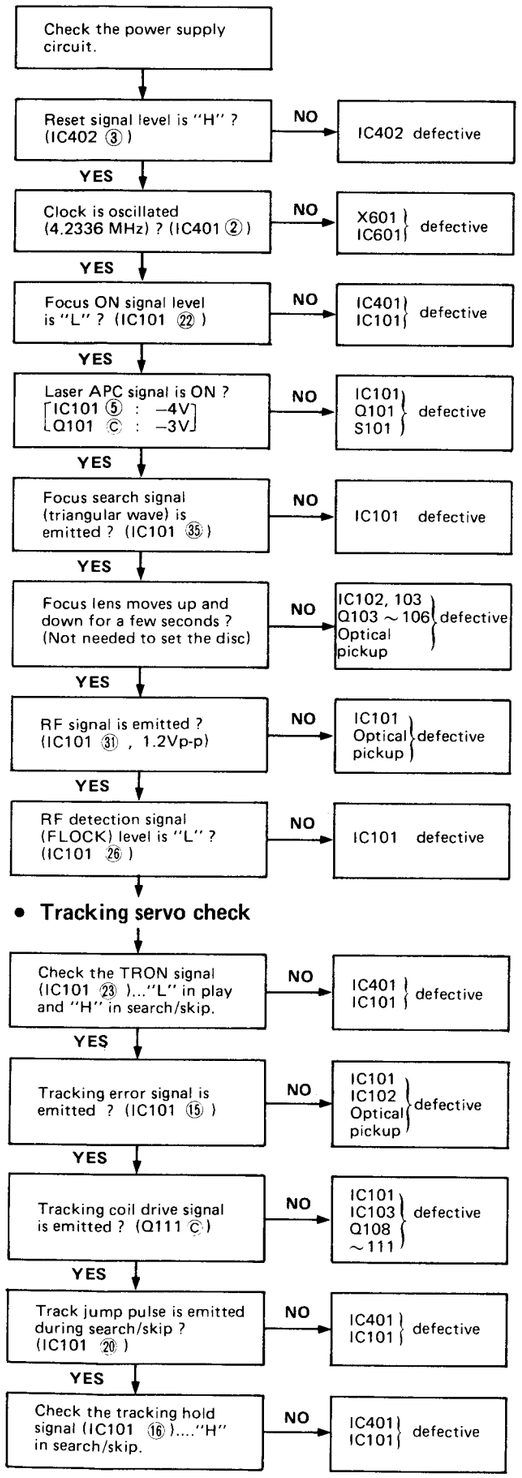
Note: 1. Carefully handle the compact disc because stains, dust or warping may cause generation of noise.
2. If the optical pickup lens is stained, it may cause skipping.
Refer to "CLEANNING OF LENS (page 8)".
3. For the voltage value and waveform, refer to the schematic diagram.
(The voltage value and waveform slightly varies depending on the measuring set and power supply.)
4. Possible defects are mainly shown by the name of semi-conductor. The adjacent electronic circuits (such as C and R) are omitted.

• Check the power supply circuit




POWER SUPPLY CIRCUIT BLOCK DIAGRAM ※ The parenthesized is the voltage in play mode, and the other, in stop mode.
CS10 ⑥
CS10 ⑧
10.3V (8.3V)
Q713, 714, 716
−0.7V (7.8V)
Q731 IC731
0V (5V)
Q105, 110 IC501 Focus and tracking coil drive, spindle motor drive.
Q1, IC101−103, IC201, 202, IC301, IC801, IC803−805 LPF801, 802 RF amp., Optical servo, Traverse servo, Data slice, PLL, D/A convertor, Audio circuits
4.5V (0.8V)
IC702
Q715
IC401 29 Pin 4.9V (0V)
Q735
0V (4.4V)
IC203 (Traverse motor drive)
(−5.2V)
−0.8V
Q732− 734
Q711, 712, 717
−2.6V (−8V)
S101, IC101−103, IC201, IC301, IC803− 805, LPF801, 802 RF amp., Optical servo, Traverse servo, Data slice, PLL, D/A convertor, Audio circuits
−10.7V (−8.2V)
5V (5V)
Q807, IC401, IC402, IC501, IC601, IC602 Muting, System control, Spindle motor drive, Digital circuit
Q106, 111, IC501 Focus and tracking coil drive, Spindle motor drive.

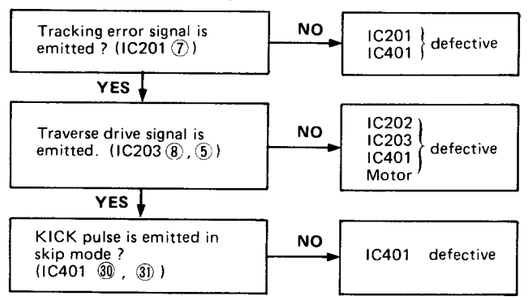
• Focus servo check


Check the power supply circuit.
Reset signal level is "H" ? (IC402 ③)
NO
IC402 defective
YES
Clock is oscillated (4.2336 MHz) ? (IC401 ②)
NO
X601 IC601 defective
YES
Focus ON signal level is "L" ? (IC101 ㉒)
NO
IC401 IC101 defective
YES
Laser APC signal is ON ? [IC101 ⑤ : −4V] [Q101 Ⓒ : −3V]
NO
IC101 Q101 S101 defective
YES
Focus search signal (triangular wave) is emitted ? (IC101 ㉟)
NO
IC101 defective
YES
Focus lens moves up and down for a few seconds ? (Not needed to set the disc)
NO
IC102, 103 Q103 ~ 106 Optical pickup defective
YES
RF signal is emitted ? (IC101 ㉛, 1.2Vp-p)
NO
IC101 Optical pickup defective
YES
RF detection signal (FLOCK) level is "L" ? (IC101 ㉖)
NO
IC101 defective

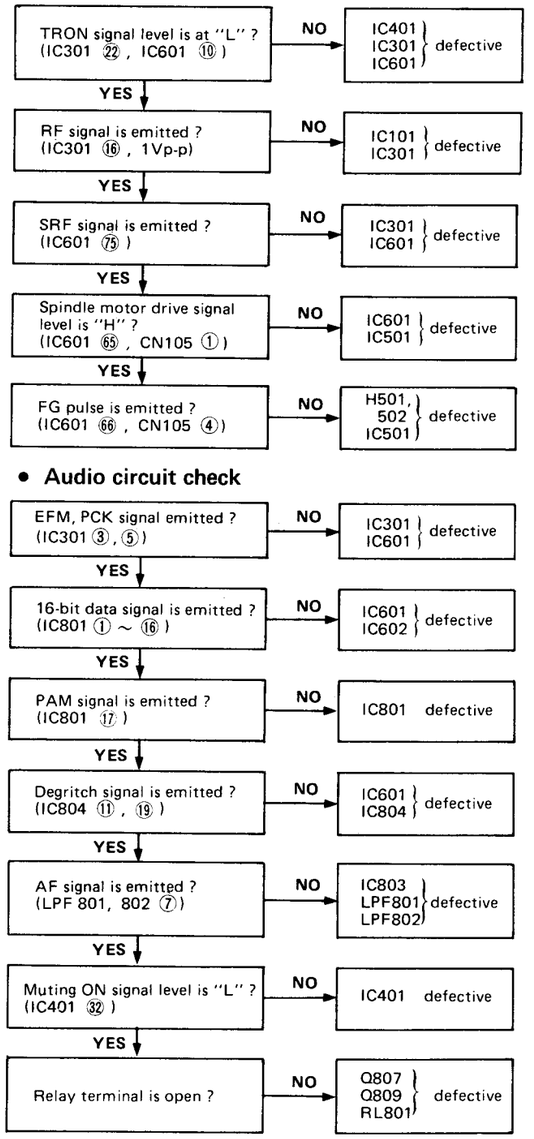
• Tracking servo check

Check the TRON signal (IC101 ㉓)..."L" in play and "H" in search/skip.
NO
IC401 IC101 defective
YES
Tracking error signal is emitted ? (IC101 ⑮)
NO
IC101 IC102 Optical pickup defective
YES
Tracking coil drive signal is emitted ? (Q111 Ⓒ)
NO
IC101 IC103 Q108 ~111 defective
YES
Track jump pulse is emitted during search/skip ? (IC101 ⑳)
NO
IC401 IC101 defective
YES
Check the tracking hold signal (IC101 ⑯)...."H" in search/skip.
NO
IC401 IC101 defective

• Traverse servo check



• CLV servo check



• Audio circuit check

MEASUREMENTS AND ADJUSTMENTS

■ On Adjusting the CD Player Unit

Please follow the procedure below for continuity checks, adjustment, or measurement of the CD player.
Notes:

(1) Even if during operation, the laser diode does not emit laser if the disc holder cover is not closed and safety interlock switches S101 (laser power switch) and S103 (close switch) are not on.

(2) When the disc holder cover is closed and safety interlock switches S101 and S103 are on, never look at the lens of laser pickup.

1. SPECIAL TOOLS

① FPC relay board
② FPC extension cord
③ PCB connection cord
④ 8 pin extension cord
⑤ 6 pin extension cord

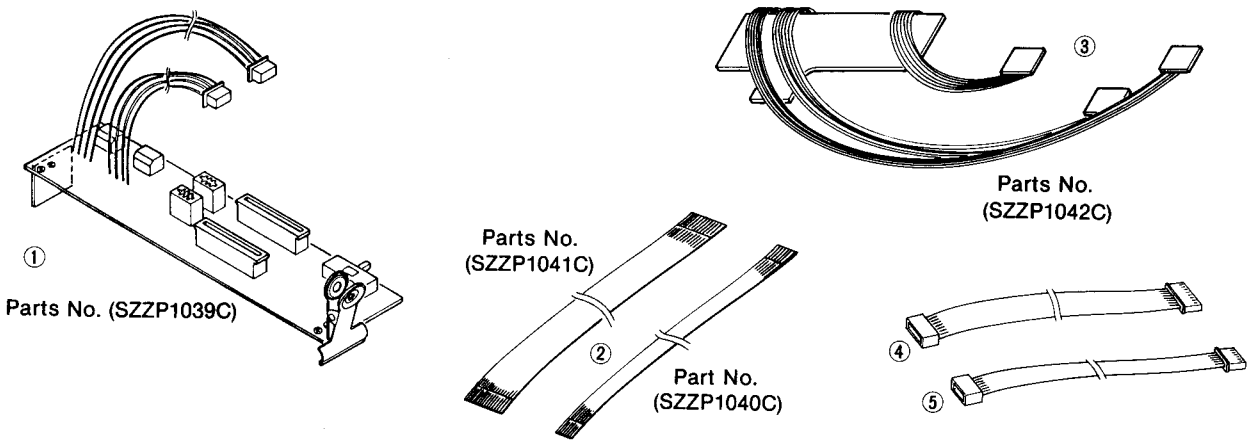


Fig. 1

2. DISASSEMBLY PROCEDURES

Before beginning disassembly, you must use the following procedure to remove the laser pickup from the center. (When removing the servo board, the rack gear might touch the servo board causing damage if the laser pickup is at the inner side.)

<Procedure>

① Insert a compact disc (CD).
② Turn the power switch on and set the unit to the play mode.
③ Skip to the end of the program. When it reaches the end, the laser pickup moves to the outer side automatically.
④ Turn the power switch off and remove the CD.

(1) Remove the front cabinet and CD player unit by following the disassembly instructions on page 9.

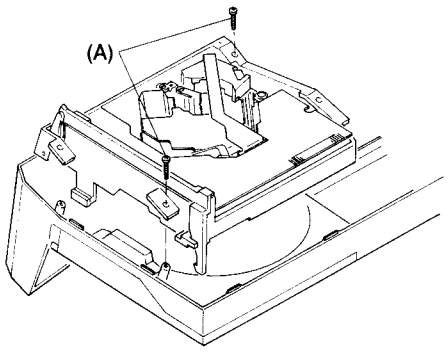


Fig. 2

(2) Mount the CD player unit to the inside of the front cabinet and fasten part (A) with 2 screws (3×6mm).

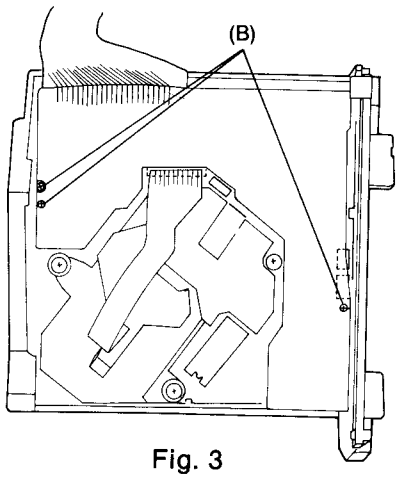


Fig. 3

(3) Remove the 3 screws (B) (3×6mm).

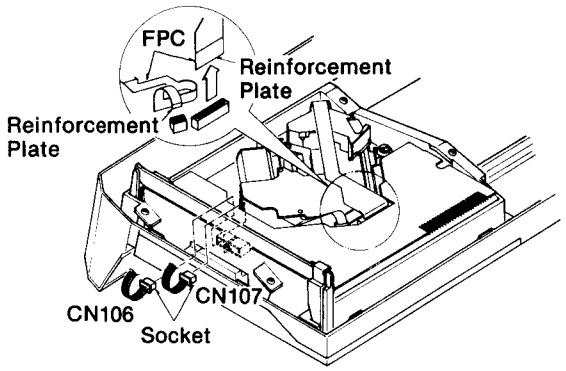


Fig. 4

(4) Pull out the 2 FPC (15-conductor) cords. (Be sure not to tear the flexible board.)

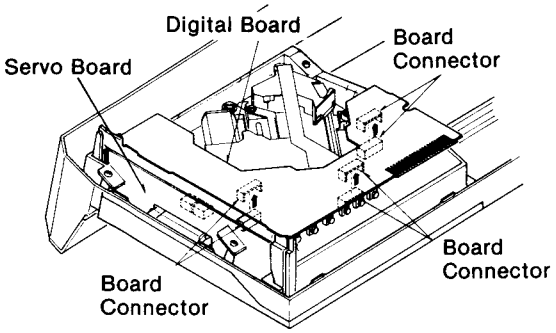


Fig. 6

(5) Remove the digital board.

Note: The 2 boards (digital board and servo board) are connected by 3 board connectors. When removing, be sure to hold the board near the board connector so as not to crack the board.

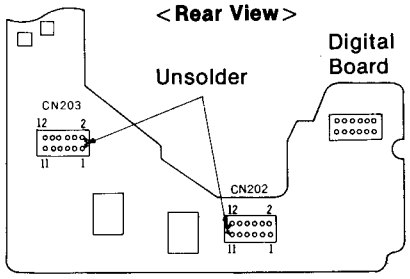


Fig. 8

3. SETTING UP THE SPECIAL TOOLS

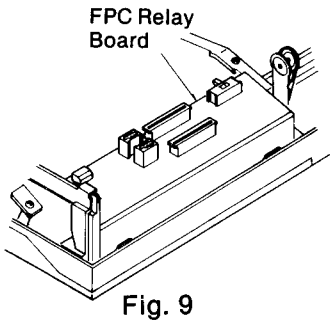


Fig. 9

(1) Attach the FPC relay board.

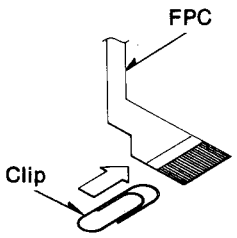


Fig. 5

Note: To prevent damage to the removed FPC cord due to static electricity, clip it as shown in above to short it.

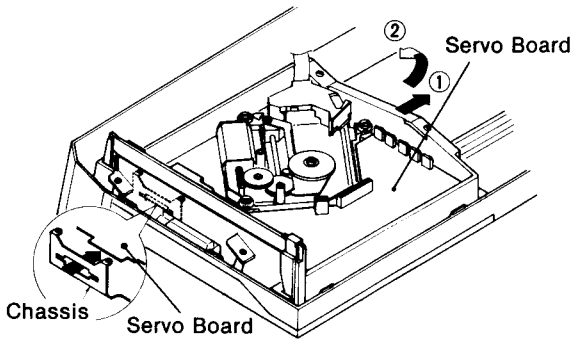


Fig. 7

(6) Move the servo board in the direction of arrows ① and ②, and remove.

(7) Remove the solder on the digital board between pins ⑪ and ⑫ connector CN202 and between pins ① and ② of CN203.

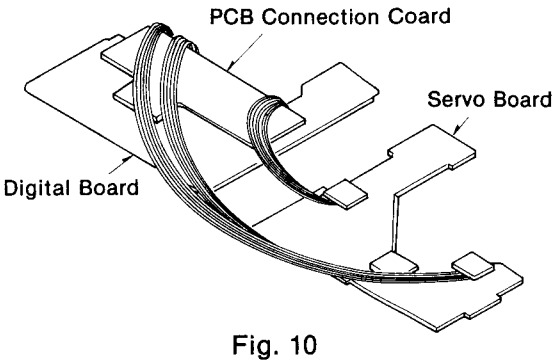


Fig. 10

(2) Connect the digital board and the servo board with the PCB connection cord.

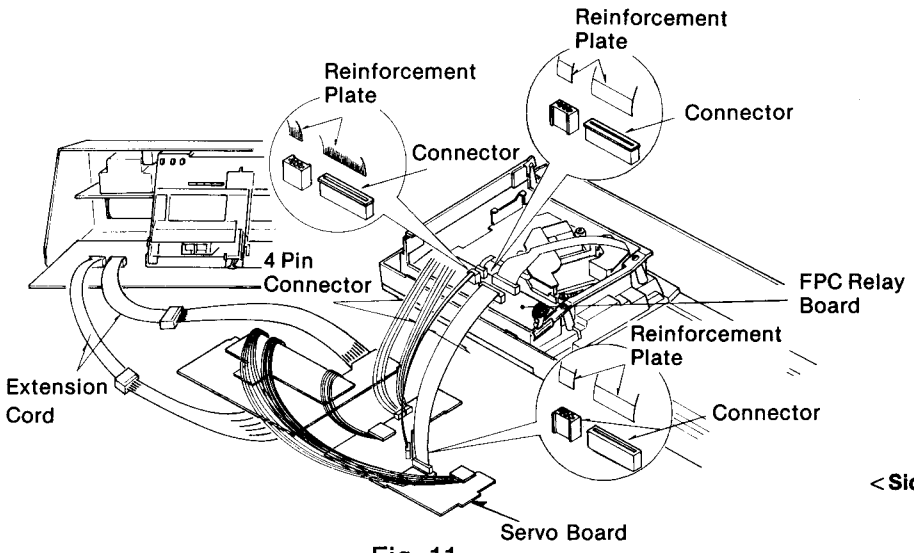
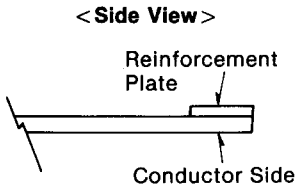


Fig. 11



(3) Next, connect the FPC extension cord between FPC relay board and servo board.
Note: Be sure to correctly orient the reinforcement plate and conductor side when connecting the FPC extension cord.

(4) Connect the two 4-pin sockets (extension wires from CN106 and CN107) to the respective plugs (CN106 and CN107) on the servo board.

(5) Connect the set's FPC cord and the 4-pin connector to the relay board.
Note: When connecting, be sure to properly align the FPC.

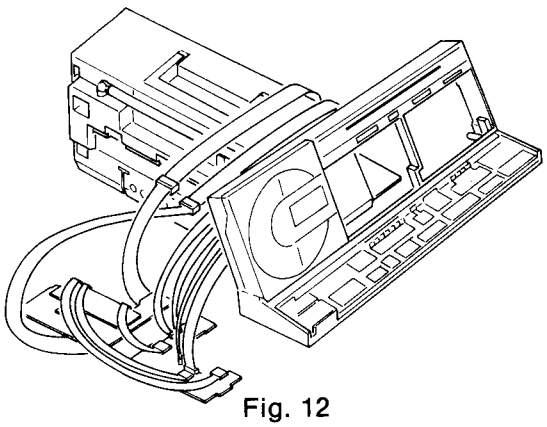


Fig. 12

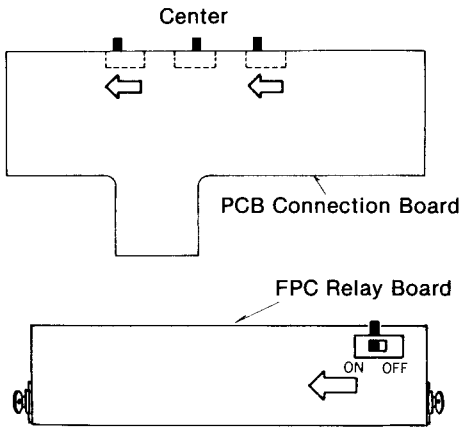


Fig. 13

(6) After completing the connections above, lean the front cabinet against the set as shown in the figure.
(This CD player is assembled at a 72° angle. If it is adjusted in any other angle or when laying flat, the laser pickup will be displaced, preventing normal operation.

(7) Set the switches on the PCB connection board and FPC relay board as shown by the arrows.

(8) Check to see that the power switch is at its OFF position. Then connect the AC power cord.

(9) Load a disc and turn on the power switch.

4. INITIAL SETTING POINTS OF ADJUSTING VARIABLE RESISTORS

The player operates but not optimum at the above settings of the adjusting variable resistors. Adjust them according to the adjusting procedure. Must conduct the electrical adjustment when any electrical part is replaced. Perform ① optical pick-up adjustment and ② electric adjustment in the stated order when the optical pick-up is replaced.

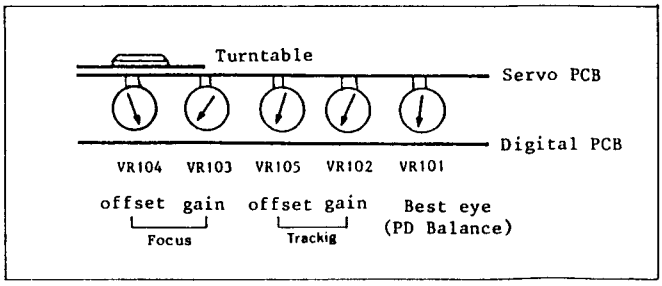


Fig. 14

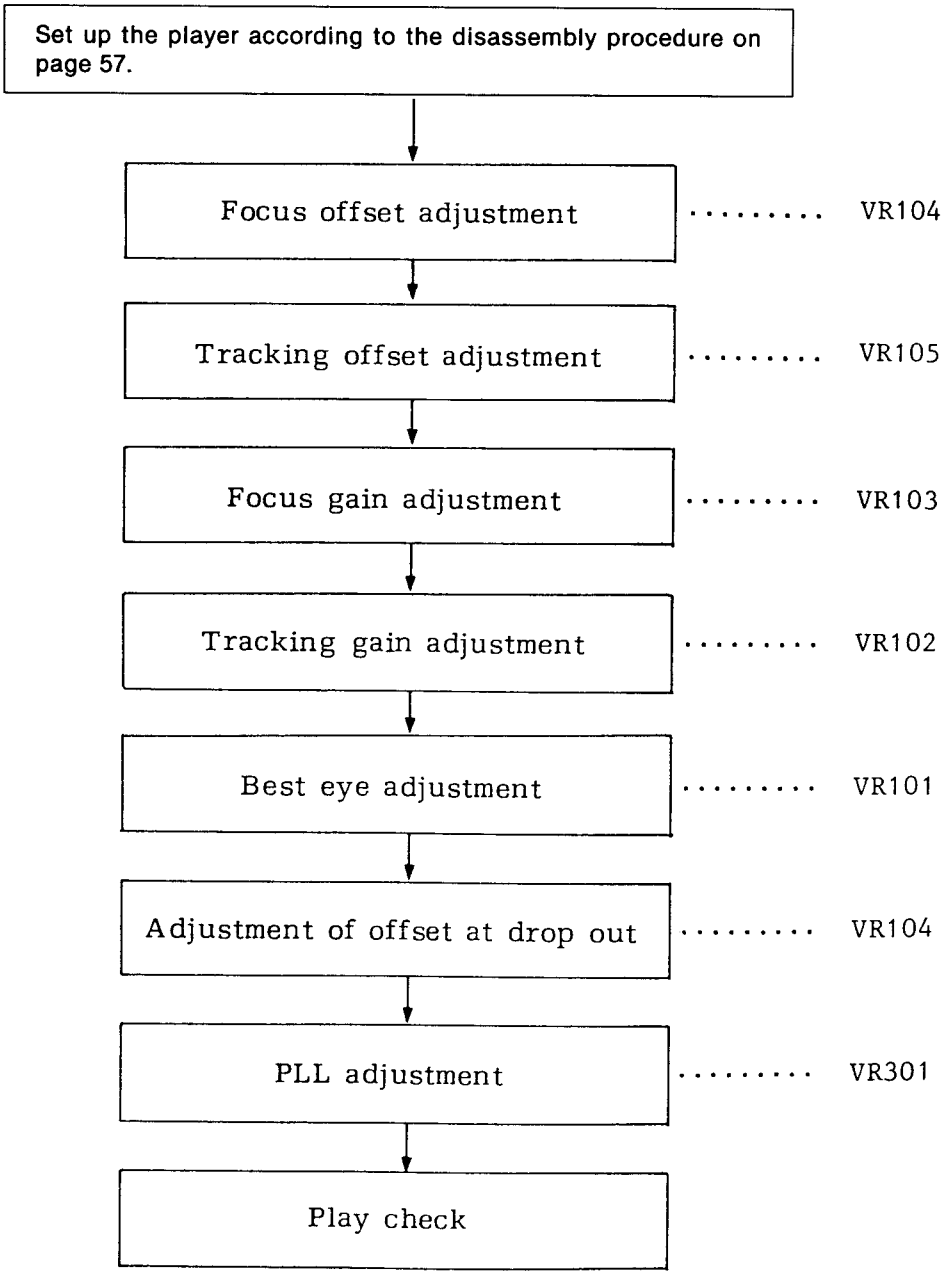
5. ADJUSTMENT PROCEDURE

5-1. Electrical Adjustment

(1) Measuring Instruments and Tools

① 2-channel oscilloscope (with external trigger, 30 MHz or over).
② Low frequency oscillator (Audio used).
③ Screwdriver for watch (Hozan tool No.D22 ⊕ No.0·⊖ 2mm)
④ Allen wrench (Hozen tool No. W91 · 1.5mm)
⑤ Other common tools

(2) Adusting Sequence and Locations


Set up the player according to the disassembly procedure on page 57.
Focus offset adjustment VR104
Tracking offset adjustment VR105
Focus gain adjustment VR103
Tracking gain adjustment VR102
Best eye adjustment VR101
Adjustment of offset at drop out VR104
PLL adjustment VR301
Play check

(3) Location of Adjusting Variable Resistors of each PCB.

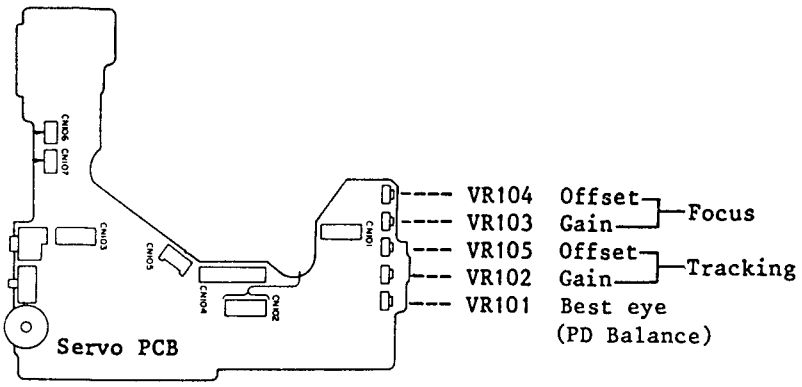


Fig. 2-1

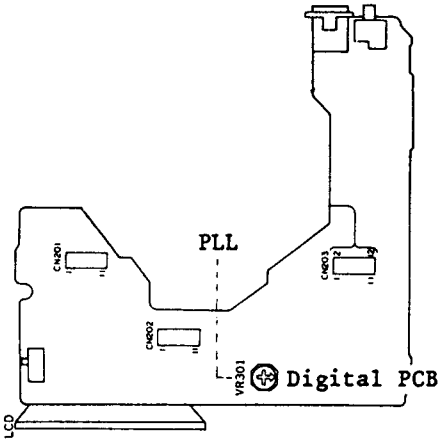


Fig. 2-2

(4) Electrical Adjustment

A. Focus Offset Adjustment

① Position the switches of the PCB connection cord as illustrated in Fig. 2-3.

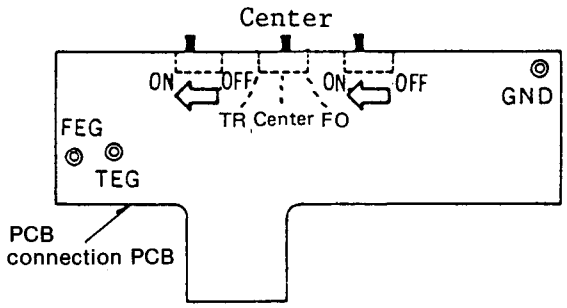


Fig.2-3

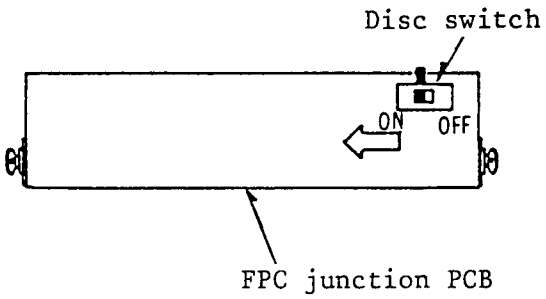


Fig. 2-4

② Set the input selector switch of the oscilloscope to the GROUND position for zero balancing.

③ Connect the oscilloscope to the FEG and GND terminals of the PCB connection cord.

Oscilloscope setting
- VOLT 100mV
- SWEEP ..... 1msec.
- Input selector ..... D.C

④ Place the test disc (SZZP1014F), switch on the power supply to set the player to the playing status.

⑤ Set the disc switch of the FPC junction PCB to the OFF position.

⑥ Adjust VR104 so that the DC voltage indicated on the oscilloscope shall be 0 V.

⑦ On completion of adjustment, set the disc switch to the ON position.

⑧ Set the power supply switch to the OFF position.

B. Tracking Offset Adjustment

① Set the switches of the PCB connection cord in the same positions as in the focus offset adjustment.

② Connect the oscilloscope to the terminals TEG and GND of the PCB connection cord. (The oscilloscope must have been zero-balance adjusted.)

Oscilloscope setting
- VOLT 100mV
- SWEEP ..... 1 msec.
- Input selector ..... D.C

③ Turn on the power supply switch.

④ Place the test disc (SZZP1014F) and play the outermost track.

⑤ If the player starts play, hold the magnet rotor of the spindle motor (shown in Fig. 2-5) with the hand to stop the rotation.

⑥ Adjust VR105 so that the center of the DC waveforms displayed on the oscilloscope shall be 0 V.

⑦ Set the power supply switch to the OFF position.

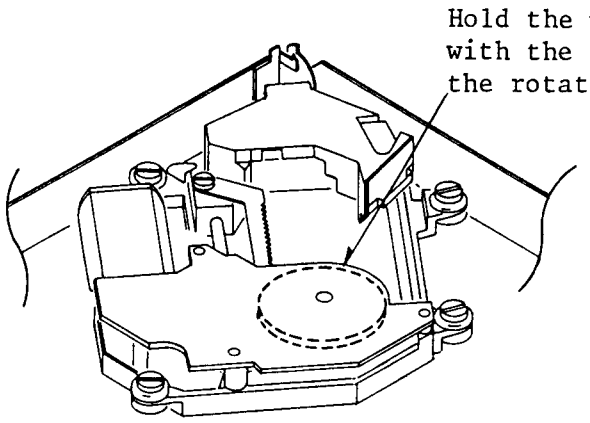


Fig. 2-5

Fig. 2-6

C. Focus Gain Adjustment

① Set the switches of the PCB connection cord as illustrated in Fig. 2-7.

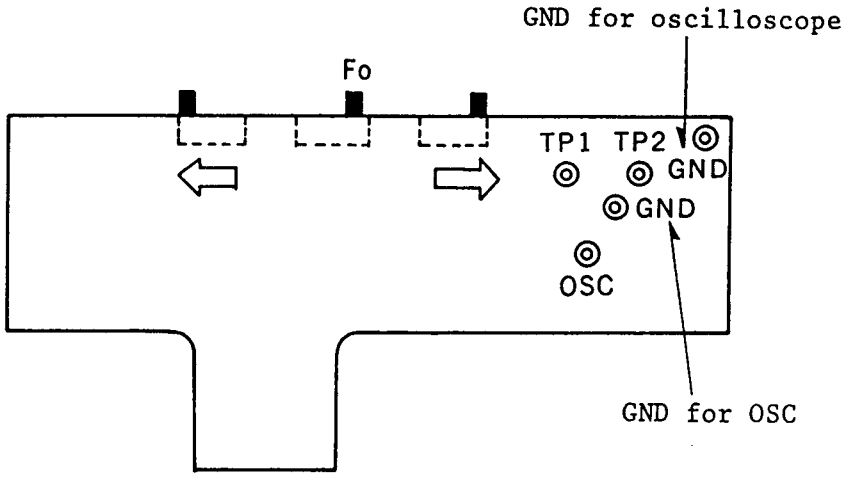


Fig. 2-7

② Connect CH1 and CH2 of the oscilloscope to the terminals TP1, TP2, and GND of the PCB connection cord.

Oscilloscope setting
- VOLT ..... 100 mV
- SWEEP ..... 5 msec.
- Input selector ..... A.C

③ Connect the low frequency oscillator set to 1 kHz and 150 mV_{p-p} to the terminals OSC and GND of the PCB connection cord.

④ Turn on the power supply switch.

⑤ Place the test disc (SZZP1014F) and set the player to the playing condition.

⑥ 1 kHz signal will be displayed on the oscilloscope. Adjust VR103 so that the amplitudes of two channels shall be equal.

⑦ Turn off the power supply switch.

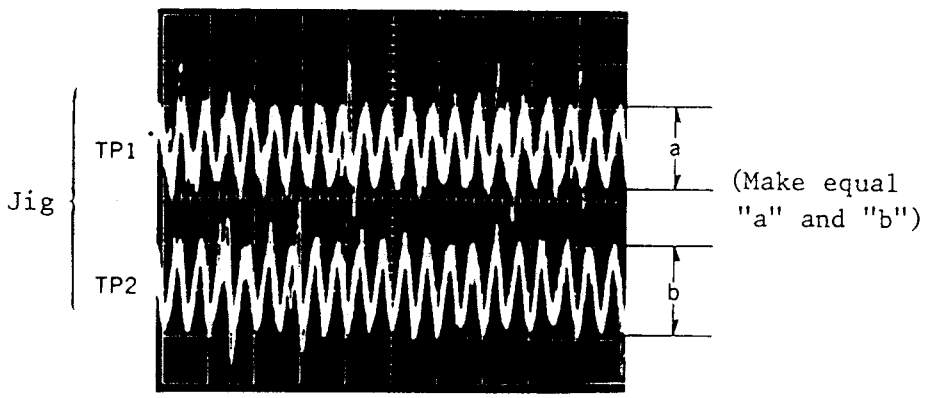


Fig. 2-8

D. Tracking Gain Adjustment

① Set the switches of the PCB connection cord as shown in Fig. 2-9.

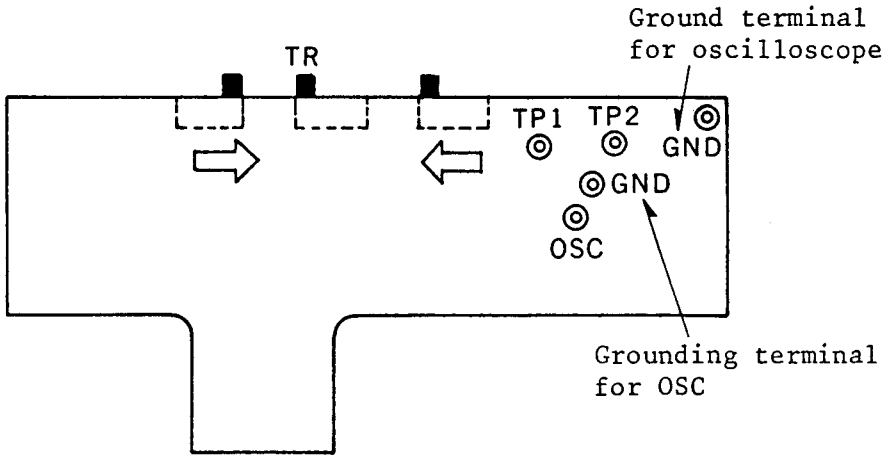


Fig. 2-9

② Connect CH1 and CH2 of the oscilloscope to the terminals TP1 and TP2 of the PCB connection cord.

Oscilloscope setting
- VOLT ..... 100 mV
- SWEEP ..... 5 msec.
- Input selector ..... A.C

③ Connect the low frequency oscillator set to 1.5 kHz and 150 mV_{p-p} to the terminals OSC and GND.

④ Turn on the power supply switch.

⑤ Place the test disc (SZZP1014F) and set the player to the playing condition.

⑥ 1.5 kHz signals are displayed on the oscilloscope. Adjust VR102 so that the amplitudes of waveforms of the two channels shall be equal as shown in Fig. 2-10.

⑦ Turn off the power supply switch.

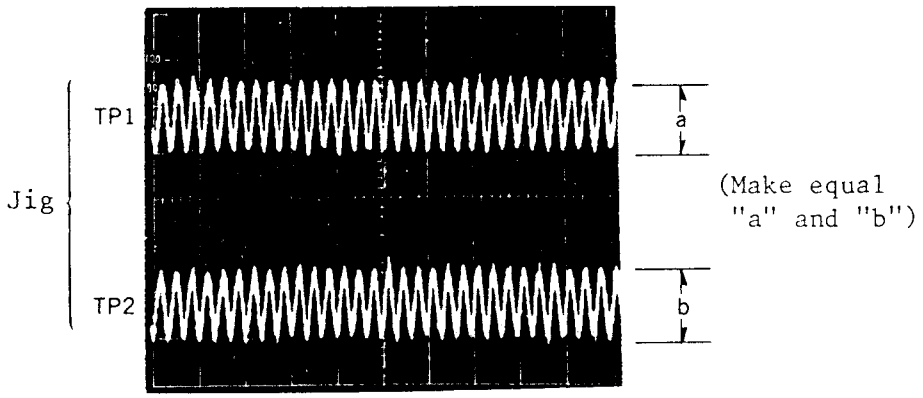


Fig. 2-10

E. Best Eye Adjustment (PD Balance)

① Position the switches of the PCB connection cord as illustrated in Fig. 2-11.

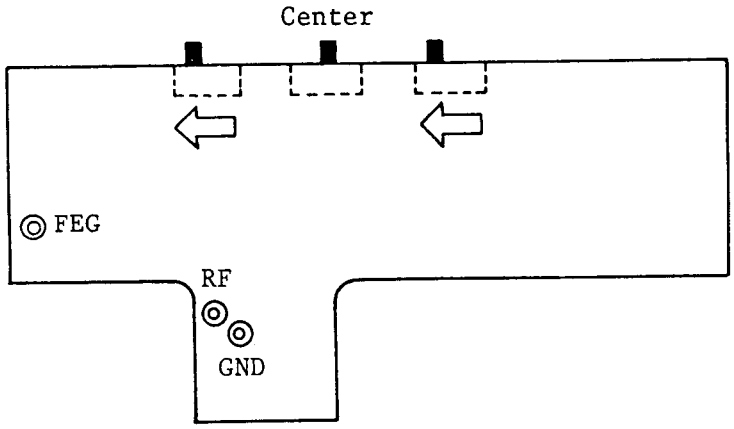


Fig. 2-11

② Connect the oscilloscope to the terminals RF and GND of the PCB connection cord.

Oscilloscope setting
- VOLT 200mV
- SWEEP..... 0.5μsec.
- Input selector ..... A.C

③ Turn on the power supply switch.

④ Place the test disc (SZZP1014F) and set the player to the playing condition.

⑤ The RF signal is indicated on the oscilloscope. Adjust VR101 so that the eye pattern shall be stretched most as illustrated in Fig. 2-12.

⑥ Turn off the power supply switch.

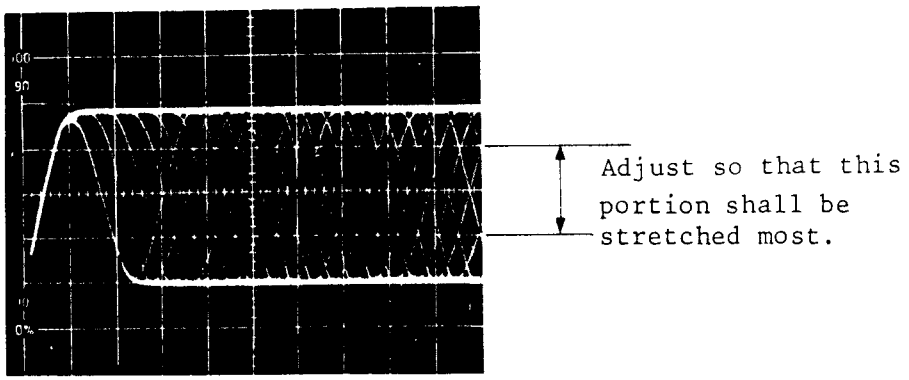


Fig. 2-12

F. Adjustment of Offset at Drop Out

① Position the switches of the PCB connection cord to the same positions as in best eye adjustment. (Refer to Fig. 2-11.)

② Connect CH1 of the oscilloscope to RF of the PCB connection cord and CH2 to FEG.

Oscilloscope setting
- VOLT..... 0.5V
- SWEEP ..... 0.5msec.
- Input selector ..... A.C
- Trigger ..... CH1, NORM.

③ Turn on the power supply switch.

④ Play back the band 8 or 13 (0.5 mm black spot) of the test disc (SZZP1014F).

⑤ Trigger so that the waveform shown in Fig. 2-13 is displayed on the oscilloscope and adjust VR104 so that the hollow of RF and the waveform amplitude of FE shall be minimum.

⑥ Turn off the power supply switch.

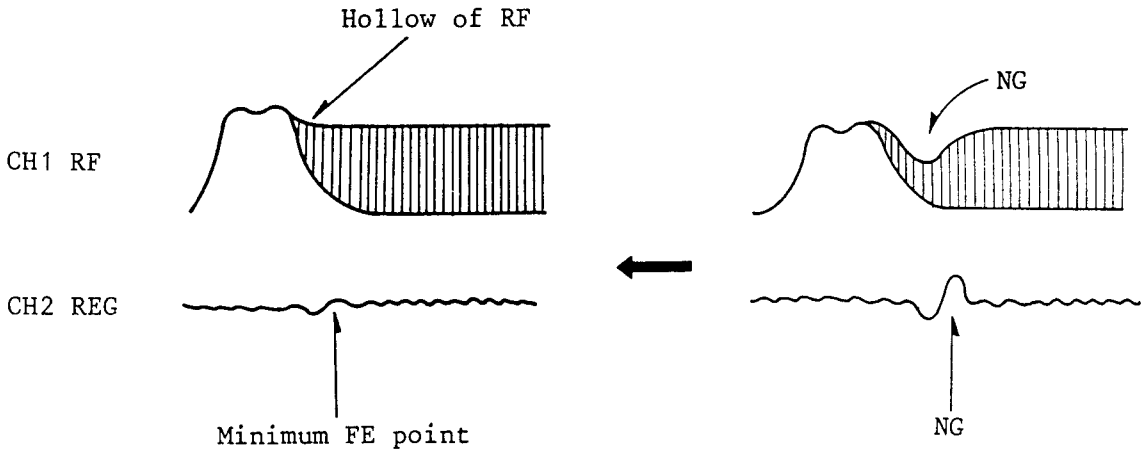


Fig. 2-13

G. PLL Adjustment

① Set the switches of the PCB connection cord to the same positions as in the adjustment of best eye. (Refer to Fig. 2-11.)

② Check the voltage at the pin ② ($\overline{CLDCK}$) of LSI/IC-601 (MN6617) with the oscilloscope.

Oscilloscope setting
- VOLT 2V
- SWEEP ..... 1msec.

③ Set the power supply switch to the ON position.

④ Play back the band 8 or 13 (0.5 mm black spot) of the test disc (SZZP1014F).

⑤ Adjust VR301 so that the shaking of waveform is eliminated or minimized as shown in Fig. 2-14.

⑥ Turn off the power supply switch.

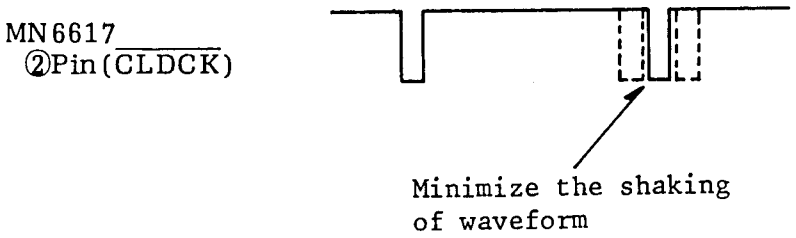


Fig. 2-14

H. Check of play operation after adjustment

Check of skip search

① Play an ordinary disc.
② Press the skip button and check to see that skip search is given. (Forward and reverse)

Check of manual search

① Play an ordinary disc
② Press the manual search button and check to see that smooth manual search can be done at low and high speeds. (Forward and reverse)

Check for defects

① Play the band 8 or 13 of test disc, (SZZP1014) and check to see that there is no sound skip or noise. (Black spot --- 0.5)
② Play the band 10 or 14 of test disc (SZZP1014F), and check to see that there is no sound skip or noise. (Fingle print)

6. REPLACEMENT AND ADJUSTMENT OF OPTICAL PICK-UP

6-1. Replacement of Optical Pick-Up

<Removing Method >

① Disassemble the player to take out the traverse unit as in Fig.3-1. (Refer to the service manual.)

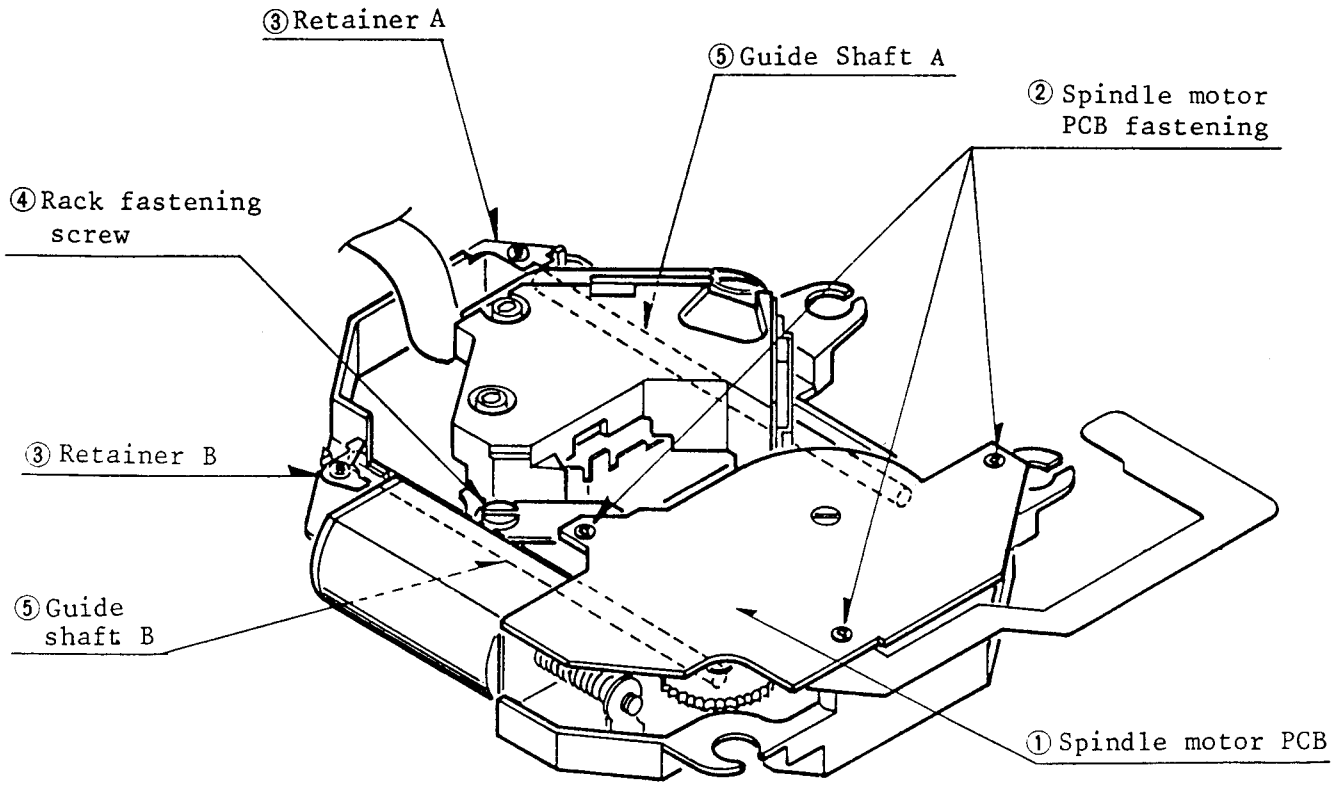


Fig. 3-1

② Remove the spindle motor by unscrewing three fastening screws as shown in Fig. 3-2.

[(Note) Exercise care not to loose three nylon washers of the PCB fastening screws.]

③ Remove the retainer A and B by unscrewing the fastening screws as shown in Fig.3-3.

④ Unscrew the rack fastening screw as shown in Fig. 3-4.
[(Note) Exercise care not to loose a wave washer.]

⑤ Take out the guide shafts A and B in the direction of an arrow shown in Fig. 3-5. The optical pick-up is removable.

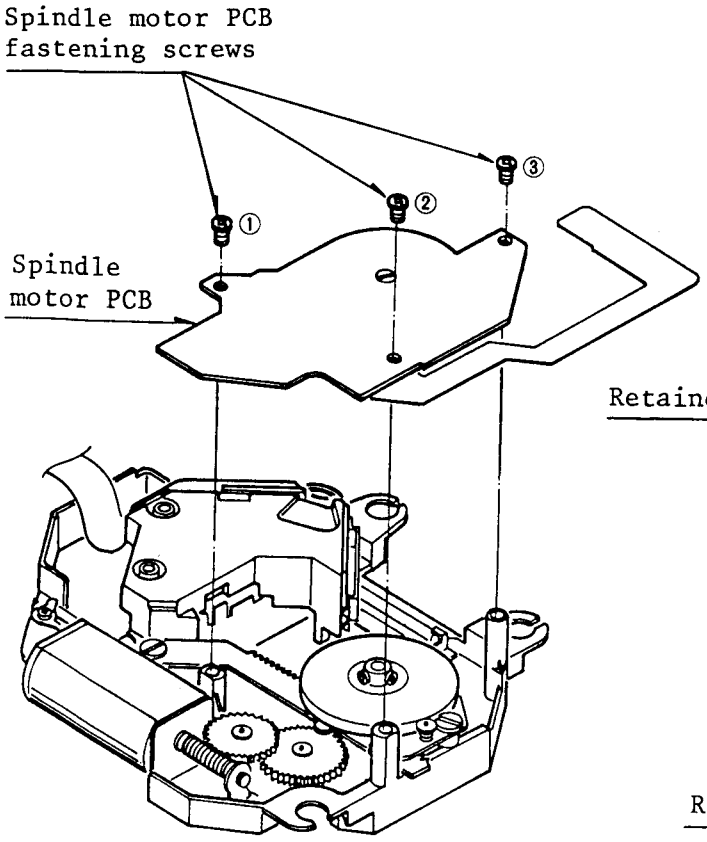


Fig. 3-2

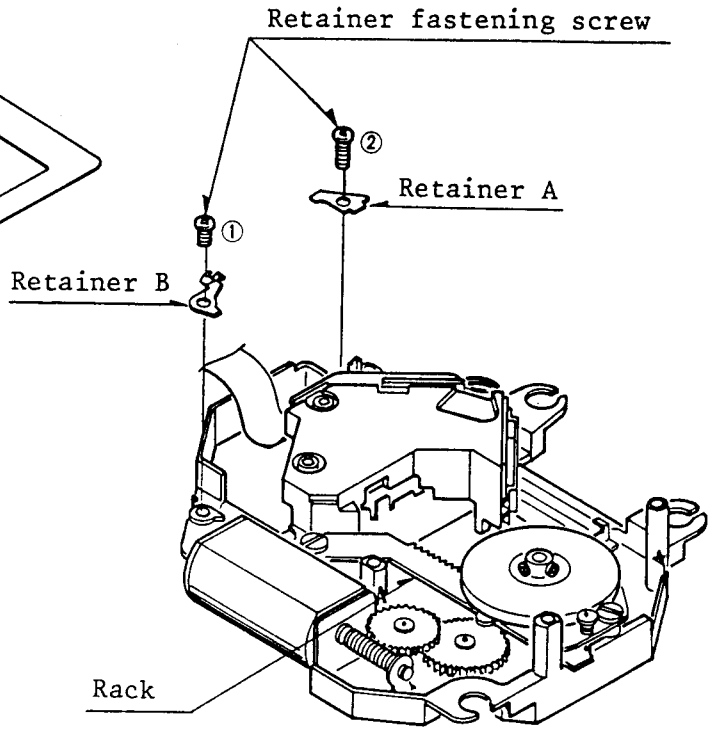


Fig. 3-3

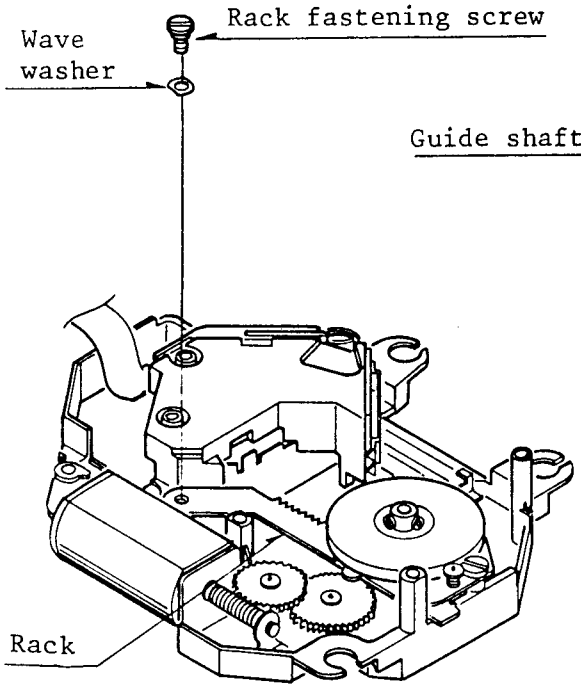


Fig. 3-4

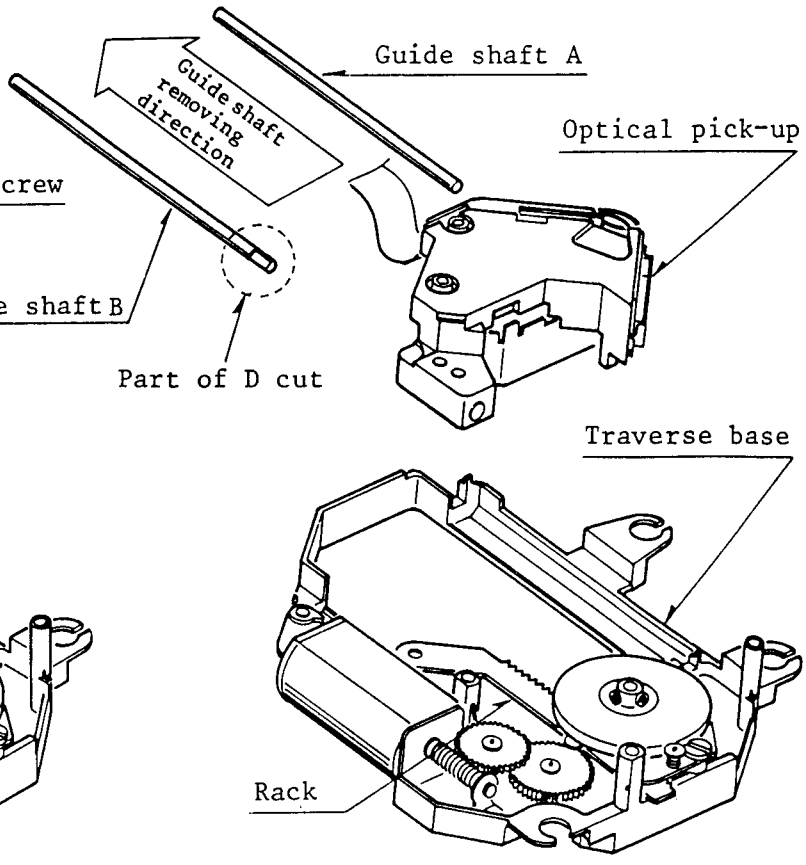


Fig. 3-5

<Installation Procedure >

Assemble the removed parts in the reversed order of the disassembling steps, by paying attention to the following points.

① Must install the guide shifts to the pick-up in the direction shown by an arrow in Fig. 3-6, and install them to the traverse base.

[(Note) If the guide shifts are installed in the reversed direction, the leaf spring in the optical pick-up may be bent.
The guide shafts A and B are not identical. Install them carefully without confusing them.]

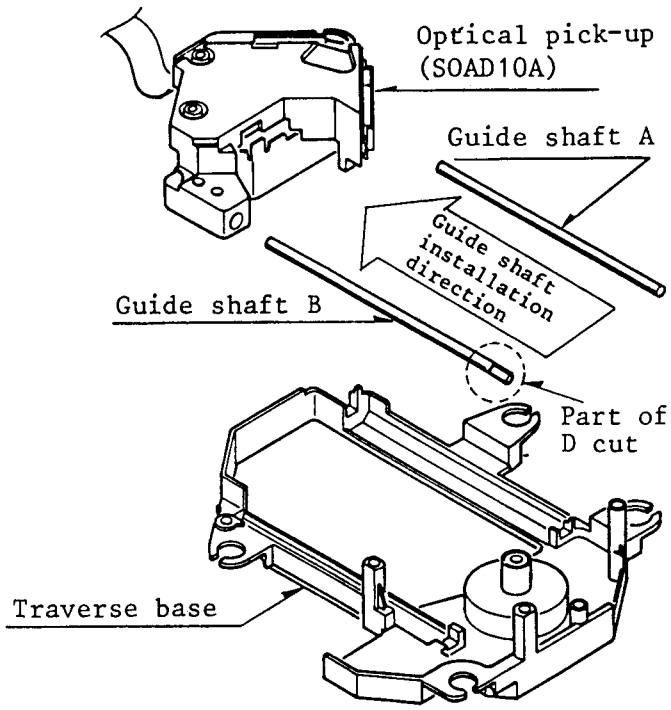


Fig. 3-6

② Ensure that the D cut of the guide shaft B is installed as illustrated in Fig. 3-7.

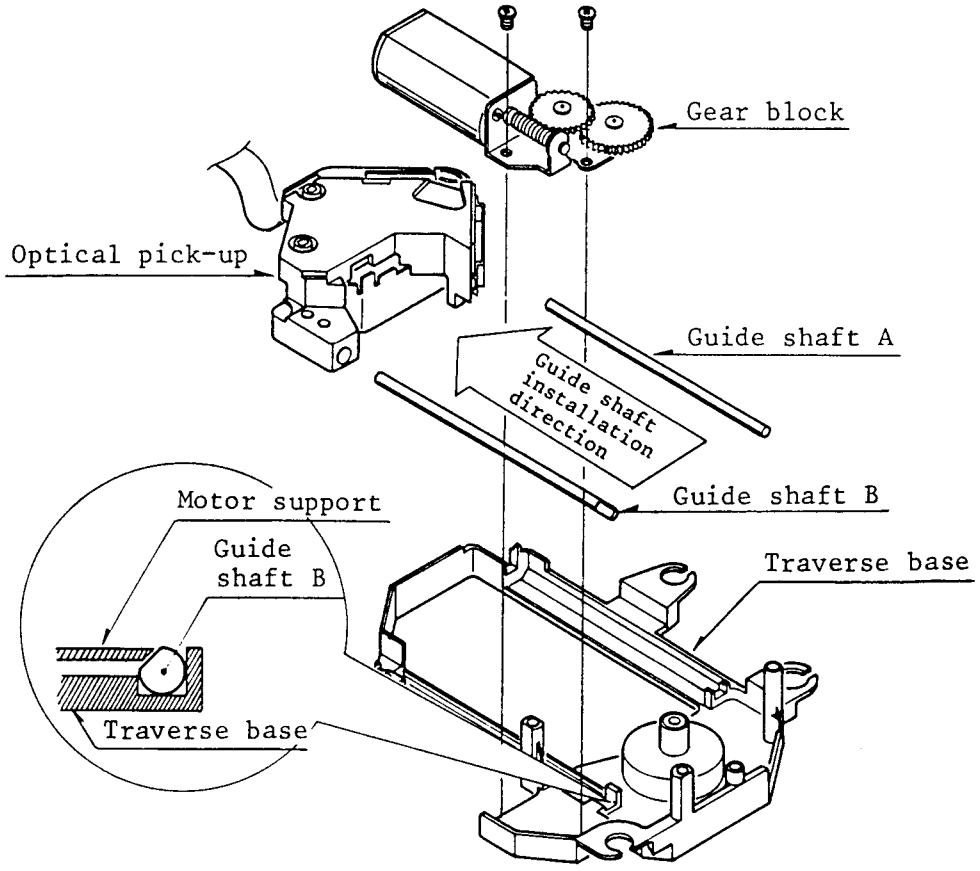


Fig. 3-7

③ Tighten the rack fastening screw with the rack in correct position as shown in Fig.3-8.

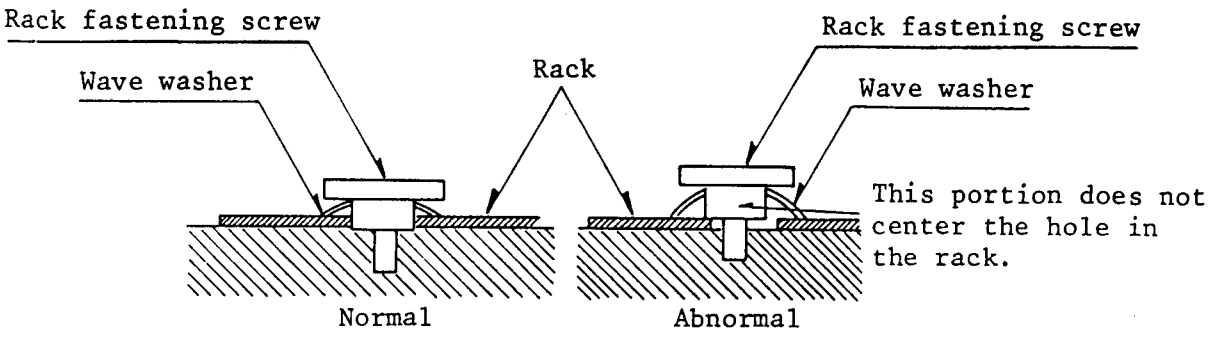


Fig. 3-8

6-2. Adjustment after Replacement of Optical Pick-Up

Preparation for Adjustment and Adjusting Points

On completion of replacing the optical pick-up, set up the player so that power-on check can be conducted.
(Set up as shown in Fig. 1-12.)

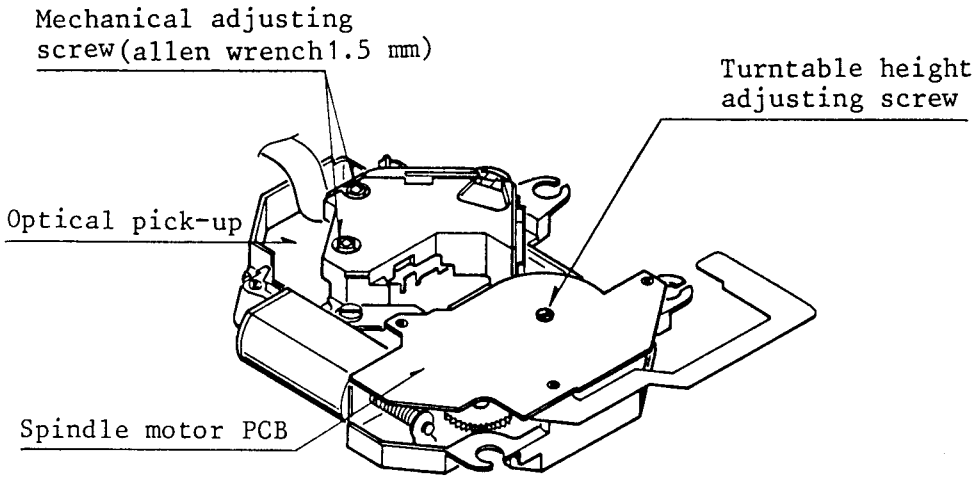
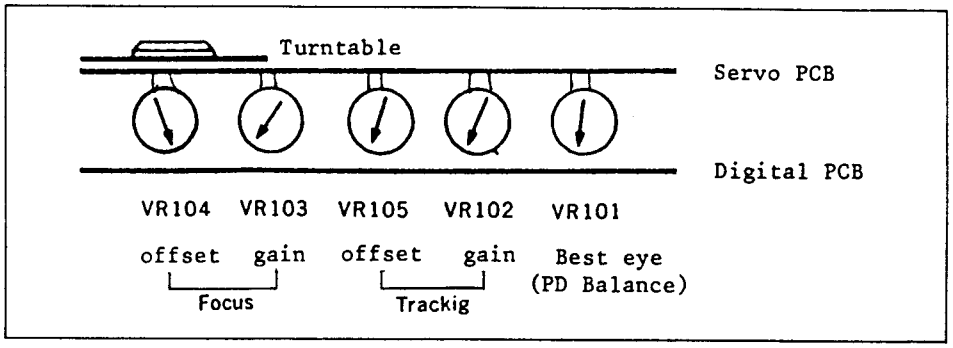


Fig. 3-9

Initial setting points of adjusting variable resistors

- Adjusting variable resistors

The player operates but not optimum at the above settings of the adjusting variable resistors. Adjust them according to the adjusting procedure. Must conduct the electrical adjustment when any electrical part is replaced. Perform ① optical pick-up adjustment and ② electric adjustment in the stated order when the optical pick-up is replaced.



A. Turntable Height Adjustment

① Position the switches of the PCB connection cord as shown in Fig.3-10.

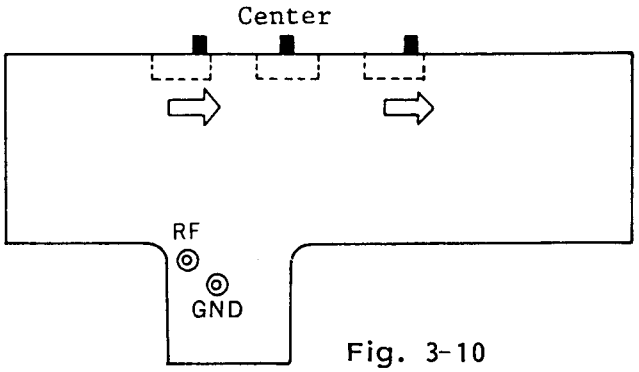


Fig. 3-10

② Connect the oscilloscope to the terminals RF and GND of the PCB connection cord.

Oscilloscope Setting
- VOLT 200mV
- SWEEP ..... 50msec.
- Input selector..... A.C

③ Lean the front cabinet against the set as show in Fig. 3-11.

④ Place the test disc (SZZP1014F) and turn on the power supply switch.

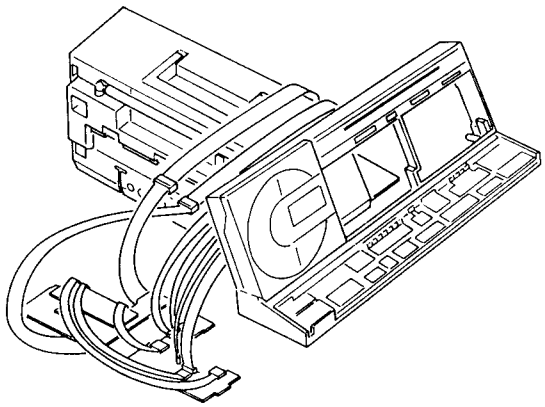


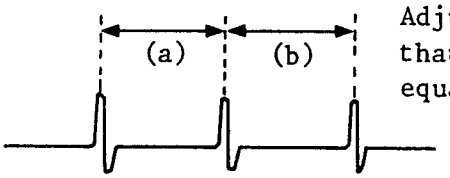
Fig. 3-11

⑤ Be sure that the waveform shown in Fig. 3-12 is displayed on the oscilloscope.

⑥ If not, adjust the turntable height adjusting screw shown in Fig. 3-9 so that the waveform shall be as illustrated in Fig. 3-12. (Handle the turntable height adjustive screw the care because the screw is plastic.)

⑦ After adjust, add the lock screw glue "like a nail paint" in turntable height adjusting screw on spendle PCB.

⑧ Turn off the power supply switch.



Adjust the screw so that the burst signals are equally spaced (a) and (b).

Fig. 3-12

B. Mechanical Adjustment

① Position the switches of the PCB connection cord as illusted in Fig. 3-13.

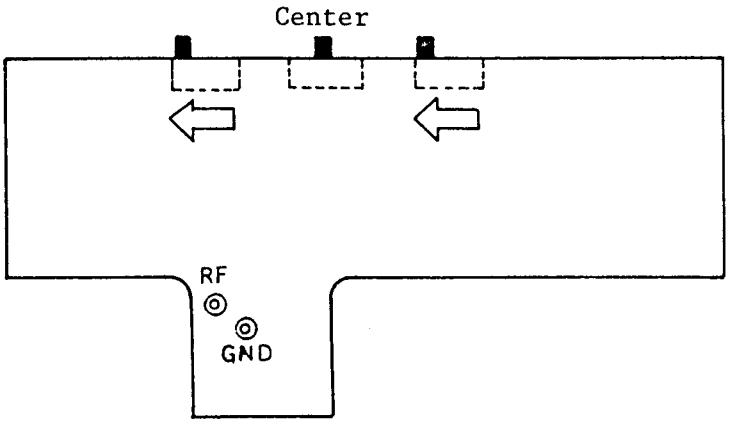


Fig. 3-13

② Connect the oscilloscope to the terminals RF and GND of the PCB connection cord.

Oscilloscope setting
- VOLT ..... 200 mV
- SWEEP ..... 0.5 sec.
- Input selector .... A.C

③ Turn on the power supply switch.

④ Place the test disc (SZZP1014F) and set the player to the playing condition.

⑤ The RF signal will be displayed on the oscilloscope. Adjust the two Methanical adjusting screws so that the eye pattern is stretched most as shown in Fig. 3-14.

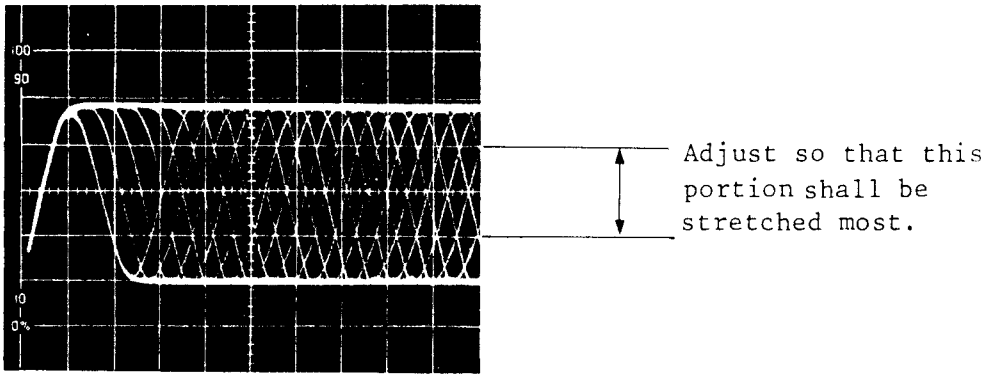


Fig. 3-14

[(Note) Must conduct electrical adjustment on completion of replacing and adjusting the optical pick-up.]

■ POINTS TO CHECK FOLLOWING REPAIR

After servicing this unit, be sure to check the operations described below.

(1) Press the power switch on the unit and check to see if the POWER/BATT. LED illuminates.
(2) Set the function button to the CD (◯) position.
(3) Press the CD eject button to unlock the disc compartment cover.
Check to see that the cover opens to its proper position.
(4) Fully open the disc compartment cover by swinging it toward you.
(5) Place the disc on the spindle's center, swing the disc compartment cover up and close it by pressing the PUSH TO CLOSE portion. Check to see that the disc loads properly.
(6) Check to see that the disc rotates and operates properly.
(7) Press the open button. When the disc compartment cover opens to its proper position, check to see that the gap between the cover and front cabinet is at least 6mm. (Measure the gap with calipers.) (See Fig. 1)
(8) In (7) above, close the disc compartment cover until the gap between the cover and front cabinet is 4.6mm. Check to see that the compact disc does not rotate. (see Fig. 2)
(9) With the disc compartment cover completely closed, check to see that the gap between the cover and front cabinet is 3mm or less. (See Fig. 3)

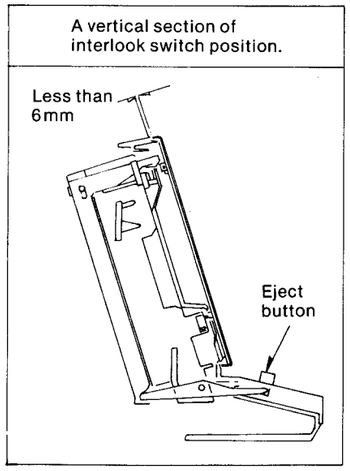


Fig. 1

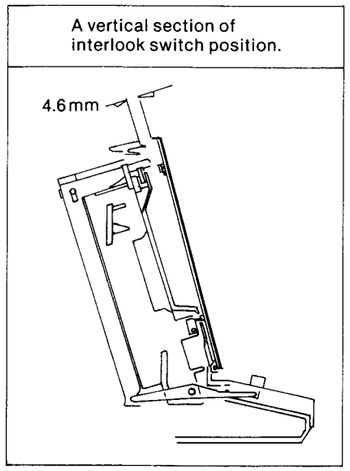


Fig. 2

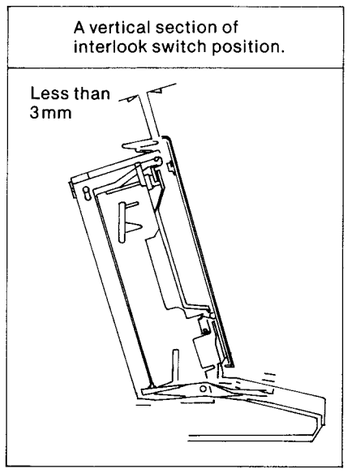


Fig. 3

MEASUREMENTS AND ADJUSTMENTS

■ ALIGNMENT INSTRUCTION

READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT	
1. Set volume control to maximum. 2. Set treble, bass control to center. 3. Set band switch to AM or FM. 4. Set function selector to radio.	5. Set power source voltage to 15V DC. 6. Output of signal generator should be no higher than necessary to obtain an output reading.

■ AM ALIGNMENT

	BAND	SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING	INDICATOR (ELECTRONICS VOLTMETER or SCOPE)	ADJUSTMENT	REMARKS
		CONNECTIONS	FREQUENCY				
	AM-IF ALIGNMENT						
(1)	AM	Fashion loop of several turns of wire and radiate signal into loop of receiver.	455kHz 30% Mod. at 400Hz	Point of non-interference. (on/about 600kHz)	Output meter across voice coil.	T2 (AM IFT)	Adjust for maximum output.
	AM-RF ALIGNMENT						
(2)	AM	〃	511kHz	Tuning capacitor fully closed.	〃	L5 (AM OSC Coil)	〃
(3)	AM	〃	1,650kHz	Tuning capacitor fully open.	〃	CT3 (AM OSC Trimmer)	〃
(4)	AM	〃	550kHz	Tune to signal.	〃	(*1) L4 (AM ANT Coil)	Adjust for maximum output. Adjust L4 by moving coil bobbin along ferrite core.
(5)	AM	〃	1,500kHz	〃	〃	CT4 (AM ANT Trimmer)	Adjust for maximum output. Repeat steps (2)~(5).

(*1) Cement antenna bobbin with wax after completing alignment.

■ FM ALIGNMENT

	BAND	SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING	INDICATOR (ELECTRONICS VOLTMETER or SCOPE)	ADJUSTMENT	REMARKS
		CONNECTIONS	FREQUENCY				
	FM-IF ALIGNMENT						
(1)	FM	High side thru. 0.001μF to test point ▼9. Negative side to test point ▼2.	10.7MHz (SWP.)	Point of non-interference. (on/about 90MHz)	Connect vert. amp. of scope to test point ▼5. Negative side to test point ▼4.	T1 (FM 1st IFT)	Adjust for maximum amplitude. (Refer to fig. 1.)
(2)	FM	〃	〃	〃	〃	T3 (FM 2nd IFT)	Adjust for maximum amplitude. (Refer to fig. 2.)
	FM-RF ALIGNMENT						
(3)	FM	Connect to test point ▼1 through FM dummy antenna. Negative side to test point ▼2.	86.2MHz	Variable capacitor fully closed.	Output meter across voice coil.	L3 (FM OSC Coil)	(*2) Adjust for maximum output.
(4)	FM		109.2MHz	Variable capacitor fully open.	〃	CT2 (FM OSC Trimmer)	〃
(5)	FM		106MHz	〃	〃	CT1 (FM ANT Trimmer)	(*2) Adjust for maximum output. Repeat steps (3)~(5).

(*2) Three output responses will be present; proper tuning is the center frequency.

■ SEPARATION ALIGNMENT

ITEM	FM SIGNAL GENERATOR SOURCE CONNECTION	EQUIPMENT CONNECTION ELECTRONIC COUNTER	ADJUSTMENT	SPECIFICATION	REMARKS
Adjustment of pilot signal.	98MHz, 60dB (CW) Connect to test point ▼1 through FM dummy antenna. Negative side to test point ▼2.	▼5...(+) ▼6...(−)	VR1	19kHz	Adjust VR1, for 19kHz (±150Hz) reading on electronics counter.

■ TAPE ADJUS

ITEM
Azimuth
Playback gain
Erase current (Tape 1)
Bias (Tape 1)
Overall gain (Tape 1)

■ TAPE SPEED

ITEM
Tape speed adjustment for high speed. (Tape 1 & 2)
Tape speed adjustment for normal speed. (Tape 1 & 2)

Notes:
1. Adjust the ta
(The normal
2. Adjust the ta

■ TAPE ADJUSTMENT

ITEM	INPUT	MEASUREMENT POINT	SPECIFICATION	ADJUSTMENT POINT	REMARKS
Azimuth	QZZCFM (8kHz, −20dB)	LINE OUT	Maximum output.	Azimuth screw (FWD, REV)	Playback mode Mode switch → STEREO (Refer to Fig. 7)
Playback gain	QZZCFM (315Hz, 0dB)	LINE OUT		TAPE 1 : VR102 (LCH) VR202 (RCH) TAPE 2 : VR101 (LCH) VR201 (RCH)	Playback mode
Erase current (Tape 1)	Use NORMAL tape	⑨...(+) ⑮...(−) (R306 1Ω)	70±5mV	VR301	Record mode • CrO_2.....90±10mV • METAL...180±10mV
Bias (Tape 1)	Use NORMAL tape	⑤...(+) (Lch) ⑨...(+) (Rch) ⑮...(−) Lch...R104, Rch...R204	4.7±0.3mV	Lch...VR103 Rch...VR203	Record mode • CrO_2.....7±1mV • METAL...11.5±2mV
Overall gain (Tape 1)	Use NORMAL tape	AUX IN −14dB/1kHz	Output...0±1dB	VR104 (Lch) VR204 (Rch)	1. Apply a −14dB/1kHz signal front the AUX IN. 2. Then, with the unit in the record mode, record a signal. 3. Playback the recorded part, and measure the output voltage of LINE OUT. 4. Compare the output voltage measured in items 2 and 3, and adjust so there is no difference in the level. (Adjust to obtain 0±1dB.)

■ TAPE SPEED ADJUSTMENT

ITEM	FM SIGNAL GENERATOR SOURCE CONNECTION	EQUIPMENT CONNECTION ELECTRONIC COUNTER	ADJUSTMENT	REMARKS
Tape speed adjustment for high speed. (Tape 1 & 2)	QZZCWAT (3kHz) Use QZZCWC (1.5kHz) tape when using a wow/flutter meter.	LINE OUT	VR302 (Tape 1) VR304 (Tape 2)	1. Short Q335 as shown in the Fig. 5 below to enter the hight speed mode. Tape 2...6kHz±30Hz Tape 1...−60±30Hz for tape speed of tape 1. (Refer to Fig. 3 & 4 when using a wow/flutter meter)
Tape speed adjustment for normal speed. (Tape 1 & 2)	QZZCWAT (3kHz)	LINE OUT	VR303 (Tape 1) VR305 (Tape 2)	1. Open Q335 and set the tape speed to normal. 2. Tape 2...3kHz±15kHz Tape 1...−30±15Hz of the speed of tape 1. (Refer to Fig. 3 & 4 when using a wow/flutter meter)

Notes:
1. Adjust the tape speed by first adjusting the height speed. Do not adjust the height speed after adjusting the normal speed. (The normal speed changes if the height speed is adjusted afterwards)
2. Adjust the tape advance speed in the following order: tape 2 height, normal speed; tape 1 height, normal speed.

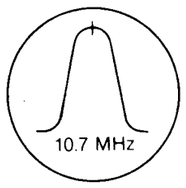


Fig. 1

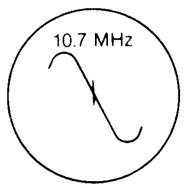


Fig. 2

• NEEDLE POSITION OF THE WOW/FLUTTER METER

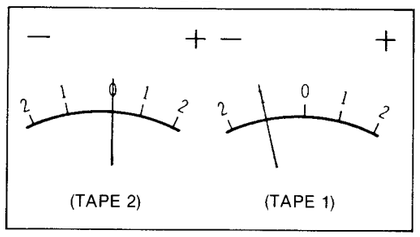


Fig. 3 Fig. 4

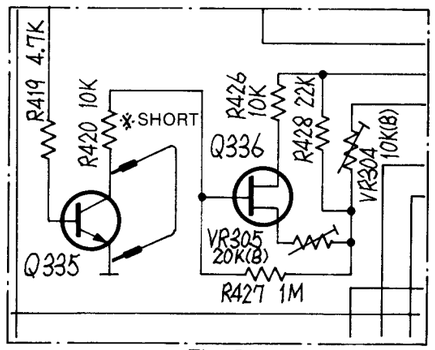


Fig. 5

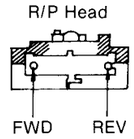


Fig. 7

■ ALIGNMENT POINTS

* Please refer to Circuit Board Diagram which is located test point.

TUNER P.C.B.

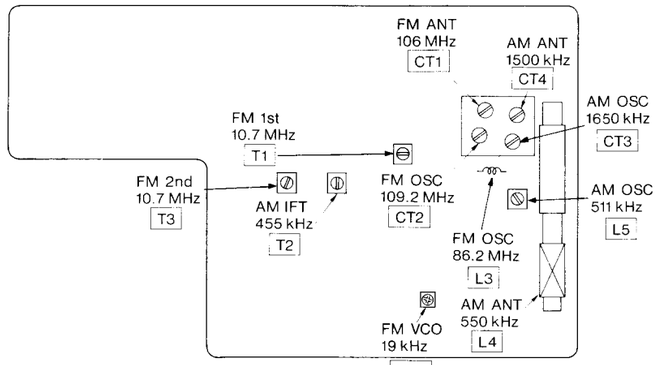


Fig. 6

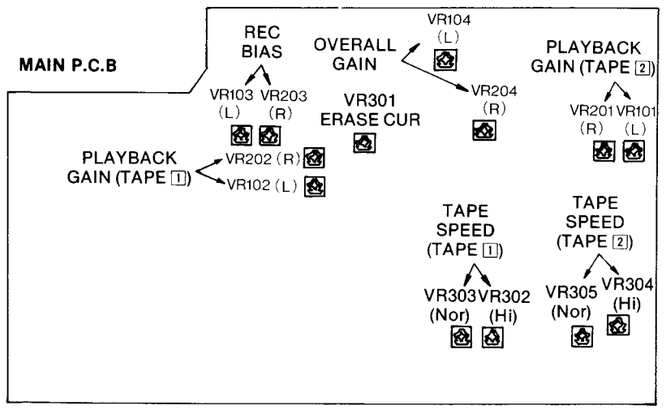


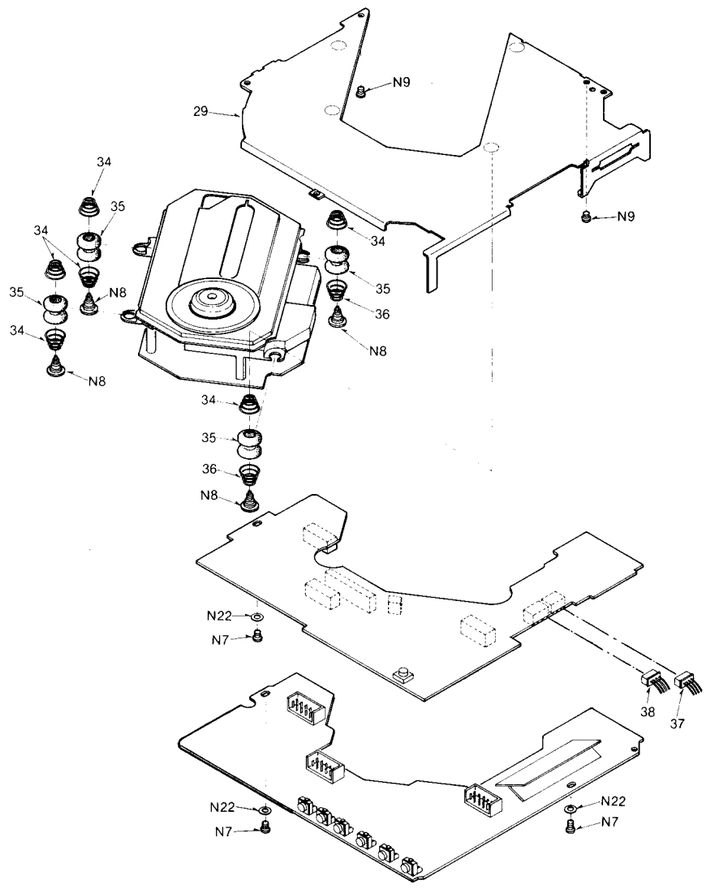
Fig. 8

■ EXPLODED VIEWS (CD PLAYER SECTION)

1 2 3 4 5 6 7 8 9 10 11

A B C D E F G H

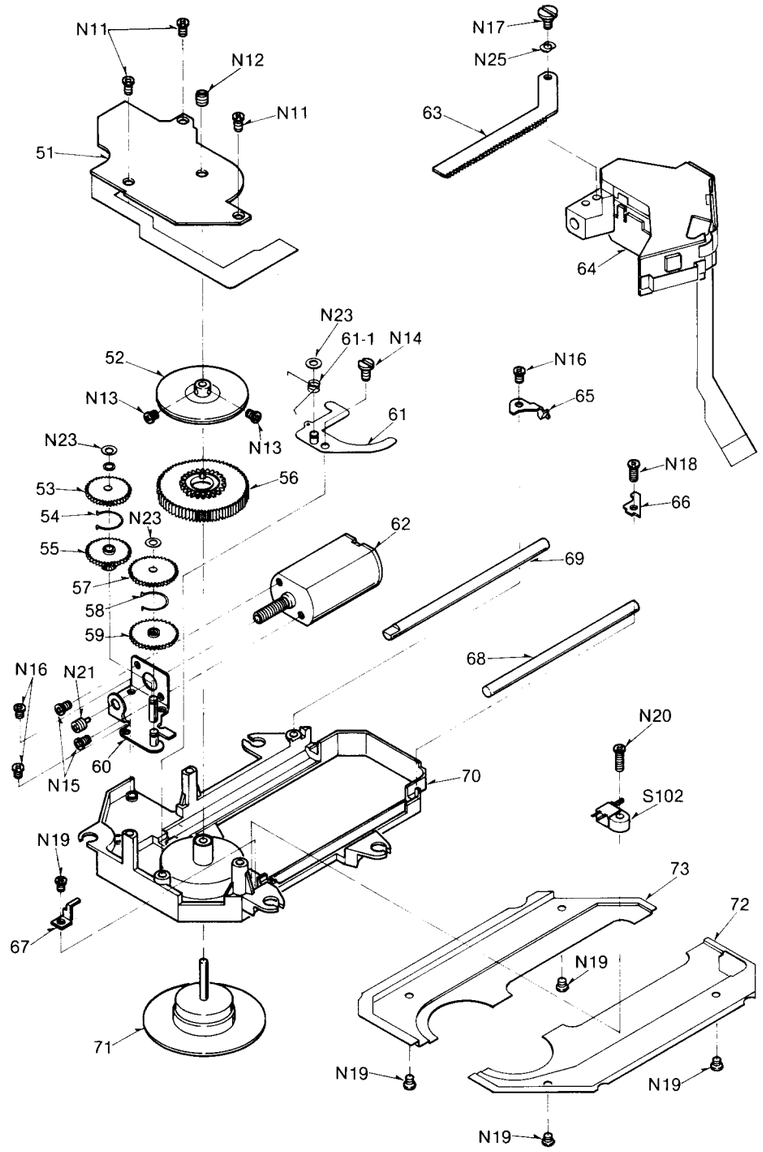
• Cabinet and chassis parts



• Connectors

39 CN101, 102, 103	40 CN201, 202, 203	41 CN104
42 CN105	43 CN106(白) CN107(赤)	

• Traverse deck parts



■ REPLACEMENT PAR

Note:
All the parts listed below are supplied
Division.

Notes: 1. Part numbers are indicated on mo
Please use this part number for pa
2. Important safety notice:
Components identified by ⚠ r
important for safety.
When replacing any of these comp
specified parts.

Ref. No.	Part No.	Part Name & Descriptio
INTEGRATED CIRCUITS		
IC 101	**AN8370S**	IC
IC 102, 103	**AN6556S**	IC
IC 201, 202	**AN1393S**	IC
IC 203	**SViMB3763PF**	IC
IC 301	**AN8371S**	IC
IC 401	**MN15845PDA4**	IC
IC 402	**MN1280－R**	IC
IC 501	**AN8281S**	IC
IC 601	**MN6617**	IC
IC 602	**MN4416S－12**	IC
IC 702	**AN8005**	IC
IC 731	**SViM5236ML**	IC
IC 801	**SViPCM55HP**	IC
IC 803	**SViNJM4560M**	IC
IC 804, 805	**SViUPD4053G**	IC
IC 1001, 1002	**MN4011BS**	IC
IC 1003	**MN4071BS**	IC
TRANSISTORS		
Q 101, 102, 103	**2SD601A**	Transistor (Si)
Q 104	**2SB709A**	Transistor (Ge)
Q 105	**2SB766QTX**	Transistor (Ge)
Q 106	**2SD874QTX**	Transistor (Si)
Q 108	**2SD601A**	Transistor (Si)
Q 109	**2SB709A**	Transistor (Ge)
Q 110	**2SB766QTX**	Transistor (Ge)
Q 111	**2SD874QTX**	Transistor (Si)
Q 402	**2SB709RPSK**	Transistor (Ge)
Q 501, 502, 503, 504	**2SB766QTX**	Transistor (Ge)
Q 711, 712	**2SB709A**	Transistor (Ge)
Q 713, 714	**2SD601A**	Transistor (Si)
Q 715	**2SB709A**	Transistor (Ge)
Q 716	**2SB956RTX**	Transistor (Ge)
Q 717	**2SD1280QTX**	Transistor (Si)
Q 731	**2SB766QTX**	Transistor (Ge)
Q 732, 733	**2SB709A**	Transistor (Ge)
Q 734, 735	**2SD874QTX**	Transistor (Si)
Q 807	**2SB709A**	Transistor (Ge)
Q 808	**2SD601RPSK**	Transistor (Si)
Q 809	**2SD601A**	Transistor (Si)
Q 1001	**2SD601**	Transistor (Si)

■ REPLACEMENT PARTS LIST

Note:
All the parts listed below are supplied by the Hi-Fi Audio Division.

Notes: 1. Part numbers are indicated on most mechanical parts.
Please use this part number for parts order.
2. Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's specified parts.

Ref. No.	Part No.	Part Name & Description
INTEGRATED CIRCUITS		
IC 101	**AN8370S**	IC
IC 102, 103	**AN6556S**	IC
IC 201, 202	**AN1393S**	IC
IC 203	**SVIMB3763PF**	IC
IC 301	**AN8371S**	IC
IC 401	**MN15845PDA4**	IC
IC 402	**MN1280-R**	IC
IC 501	**AN8281S**	IC
IC 601	**MN6617**	IC
IC 602	**MN4416S-12**	IC
IC 702	**AN8005**	IC
IC 731	**SVIM5236ML**	IC
IC 801	**SVIPCM55HP**	IC
IC 803	**SVINJM4560M**	IC
IC 804, 805	**SVIUPD4053G**	IC
IC 1001, 1002	**MN4011BS**	IC
IC 1003	**MN4071BS**	IC
TRANSISTORS		
Q 101, 102, 103	**2SD601A**	Transistor (Si)
Q 104	**2SB709A**	Transistor (Ge)
Q 105	**2SB766QTX**	Transistor (Ge)
Q 106	**2SD874QTX**	Transistor (Si)
Q 108	**2SD601A**	Transistor (Si)
Q 109	**2SB709A**	Transistor (Ge)
Q 110	**2SB766QTX**	Transistor (Ge)
Q 111	**2SD874QTX**	Transistor (Si)
Q 402	**2SB709RPSK**	Transistor (Ge)
Q 501, 502, 503, 504	**2SB766QTX**	Transistor (Ge)
Q 711, 712	**2SB709A**	Transistor (Ge)
Q 713, 714	**2SD601A**	Transistor (Si)
Q 715	**2SB709A**	Transistor (Ge)
Q 716	**2SB956RTX**	Transistor (Ge)
Q 717	**2SD1280QTX**	Transistor (Si)
Q 731	**2SB766QTX**	Transistor (Ge)
Q 732, 733	**2SB709A**	Transistor (Ge)
Q 734, 735	**2SD874QTX**	Transistor (Si)
Q 807	**2SB709A**	Transistor (Ge)
Q 808	**2SD601RPSK**	Transistor (Si)
Q 809	**2SD601A**	Transistor (Si)
Q 1001	**2SD601**	Transistor (Si)

Ref. No.	Part No.	Part Name & Description
DIODES		
D 401, 402, 403	**MA151WK**	Diode (Si)
D 404	**MA151APSK**	Diode (Si)
D 501	**MA153**	Diode (Si)
D 1001, 1002, 1003	**MA151WK**	Diode (Si)
CRYSTAL		
X 601	**SVQAT1693**	Crystal, 16.9344MHz
FILTERS		
LPF 801, 802	**SVIAL041**	Low Pass Filter
HALL ELEMENTS		
H 501, 502	**SVUHW101A**	Hall Element
VARIABLE RESISTORS		
VR 101	**EVND1AA00B53**	Variable Resistor, 5kΩ (B)
VR 102, 103, 104, 105	**EVND1AA00B14**	Variable Resistor, 10kΩ (B)
VR 301	**EVML4GA00B52**	Variable Resistor, 1kΩ (B)
SWITCHES		
S 101	**SSED1**	Laser ON/OFF
S 102	**SSHD1**	Rest
S 103	**SSHD1**	Open/Close
COIL		
L 701	**SLQDE45S100K**	10μF
CABINET AND CHASSIS PARTS		
29	**SUAD1E-2**	Chassis
34	**S0SD6-1**	Spring
35	**SHGD1-1**	Rubber Spacer
36	**S0SD10-1**	Spring
CONNECTORS		
41	**SWKDXP7061**	Connector Ass'y
42	**SWKDP7082**	Connector Ass'y
43	**EMCSK12P00A1**	Connector
44	**EMCSK12S00A1**	Connector

Ref. No.	Part No.	Part Name & Description
45	**SJSD1501**	Connector
46	**SJSD1602**	Connector
47	**EMCS0450BL**	Connector (White)
47	**EMCS0450BLR**	Connector (Red)
TRAVERSE DECK PARTS		
51	**SXPD30**	Spindle P.C.B. Ass'y
52	**S0MD2A**	Rotor Ass'y
53	**SDGD3**	Gear
54	**SUSD1**	Spring (A)
55	**SDGD2-1**	Gear (A)
56	**SDGD6**	Gear
57	**SDGD5**	Gear
58	**SUSD2**	Spring (B)
59	**SDGD4**	Gear (B)
60	**SUWD4R**	Bracket
61	**SUWD5E**	Bracket
61-1	**SUSD3**	Spring
62	**SJGD1R**	Motor Ass'y
63	**SDGD7**	Rack
64	**S0AD10A**	Optical Pick-up Ass'y ⚠
65	**SUWD1**	Plate (A)
66	**SUWD2**	Plate (B)
67	**SUWD3**	Plate (C)
68	**SUXD1**	Guide Shaft (A)
69	**SUXD2**	Guide Shaft (B)
70	**SUND1E-1**	Traverse Base
71	**SD0D1E**	Turntable Ass'y
72	**SGXD13**	Cover
SCREWS AND WASHERS		
N 7	**XQN17+C3FYR**	Screw, M1.7×3
N 8	**SNSD6-1**	Screw
N 9	**XTN17+3JFYR**	Screw, M1.7×3
N 11	**XQS17+A3**	Screw
N 12	**SNSD3**	Screw
N 13	**XQN14+A14**	Screw, M1.4×1.4
N 14	**SNSD5**	Screw
N 15	**XQS2+A25**	Screw, M2×2.5
N 16	**XQN17+C3**	Screw, M1.7×3
N 17	**SNSD4**	Screw
N 18	**XQN17+A6**	Screw, M1.7×6
N 19	**XQN17+A16FZ**	Screw, M1.7×1.6
N 20	**XQN17+C5**	Screw, M1.7×5
N 21	**SNSD2**	Screw
N 22	**SUED1**	Washer
N 23	**SHWD1**	Washer
N 25	**SNWD1**	Washer

MEMO

DISASSEMBLY PROCEDURES FOR THE MAJOR MECHANICAL PARTS

■ PINCH ROLLER (Fig. 1)

- Remove the two ribs and pull out the pinch roller (L, R)

■ HEAD BLOCK Ass'y (Fig. 1)

- Remove the one screw M101 (3×8)mm and the one screw M102 (3×5)mm.

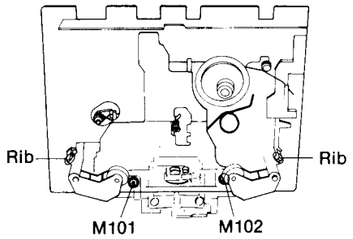


Fig. 1

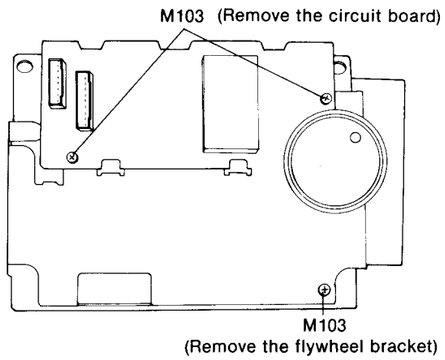


Fig. 2

■ FLYWHEEL Ass'y (Fig. 4)

- Remove the flywheel bracket by removing the motor ass'y.
- Pull out the flywheel ass'y in the direction of arrow.

■ INSTALLING THE BELT

- If the belt has come off, install as follows. (The flywheel bracket has been removed in the following illustrations.)

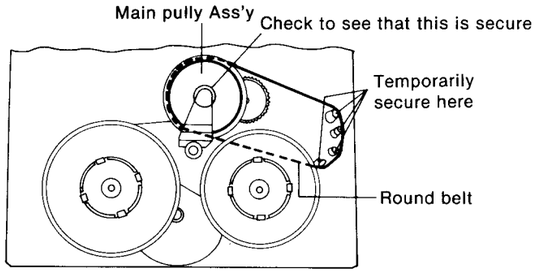


Fig. 5

■ MOTOR Ass'y (Fig. 2, 3)

- Remove the two screws M103 (2.6×7)mm and remove the print circuit board. (Fig. 2)
- Remove the one screw M103 (2.6×7)mm and remove the flywheel bracket (Fig. 2) (At this time, the belt also comes off. To install the belt, see the section below on installing the belt)
- Remove the two screws M106 (2.6×3)mm. (Fig. 3)

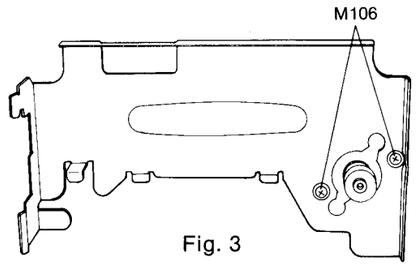


Fig. 3

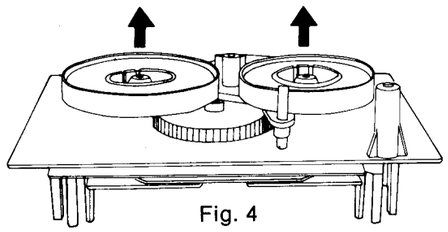


Fig. 4

- Attach the round belt to the main pulley ass'y and temporarily secure to the base on the mechanism chassis. (Check to be sure that the main pulley ass'y is firmly secured since the rubber tension of the belt will pull on it.)

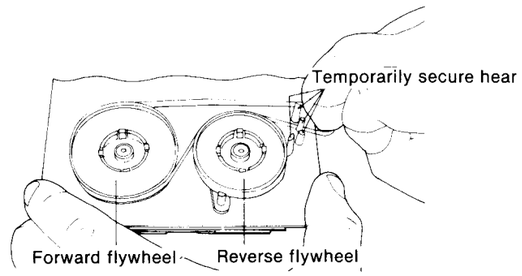


Fig. 6

- Attach the flat belt to the forward flywheel. Then attach it to the reverse flyweel and then temporarily secure it to the base where the round belt is secured. (Fig. 6)

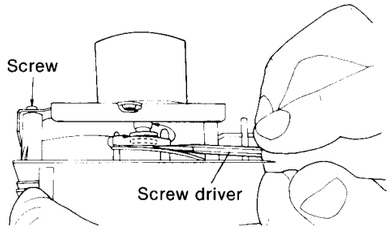


Fig. 8

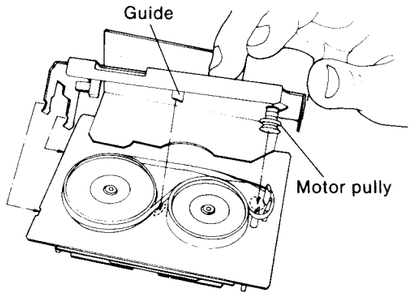
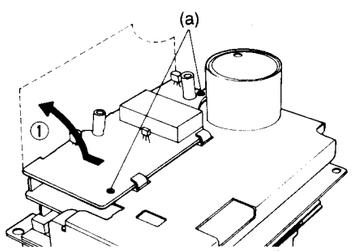


Fig. 7

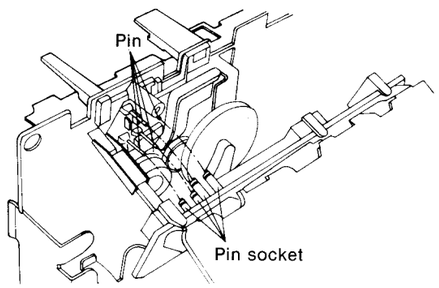
- When mounting the flywheel bracket, position the mechanism chassis and the flywheel bracket so that the motor pulley and guide fit on the chassis as shown in Fig. 7.
- Screw down the flywheel bracket. (Fig. 8)
- Using a screwdriver, position the flat belt on the top side of the motor pulley and then the round belt on the bottom side of the motor pulley.

DISASSEMBLY MECHANISM CIRCUIT BOARD



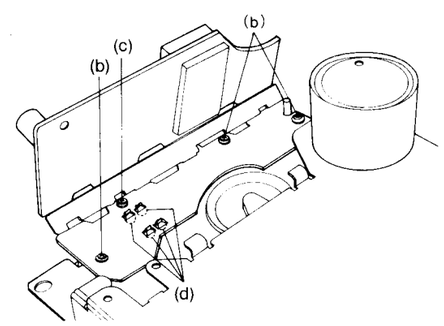
- Remove the two (a) screws (2.6×7)mm
- Pick up the circuit board in the direction of arrow ①.

Fig. 9



- When mounting the printed circuit board, be sure the pins are inserted firmly in the pin sockets.

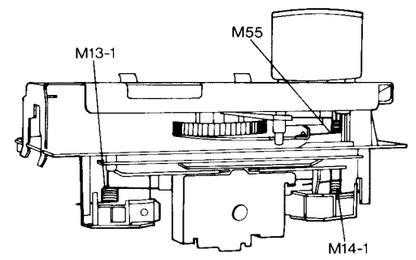
Fig. 11

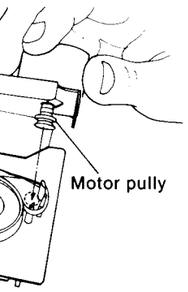


- Remove the three (b) screws (2×5)mm and the one (C) screw (2×15)mm.
- Pull out the pin socket (d)×4.

Fig. 10

■ SPRING PARTS LOCATION

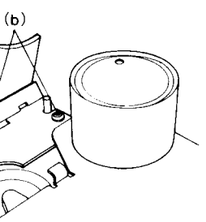




7

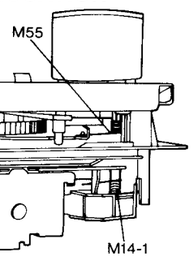
wheel bracket, position
sis and the flywheel
or pulley and guide fit on
n Fig. 7.
el bracket. (Fig. 8)
sition the flat belt on the
ulley and then the round
of the motor pulley.

BOARD

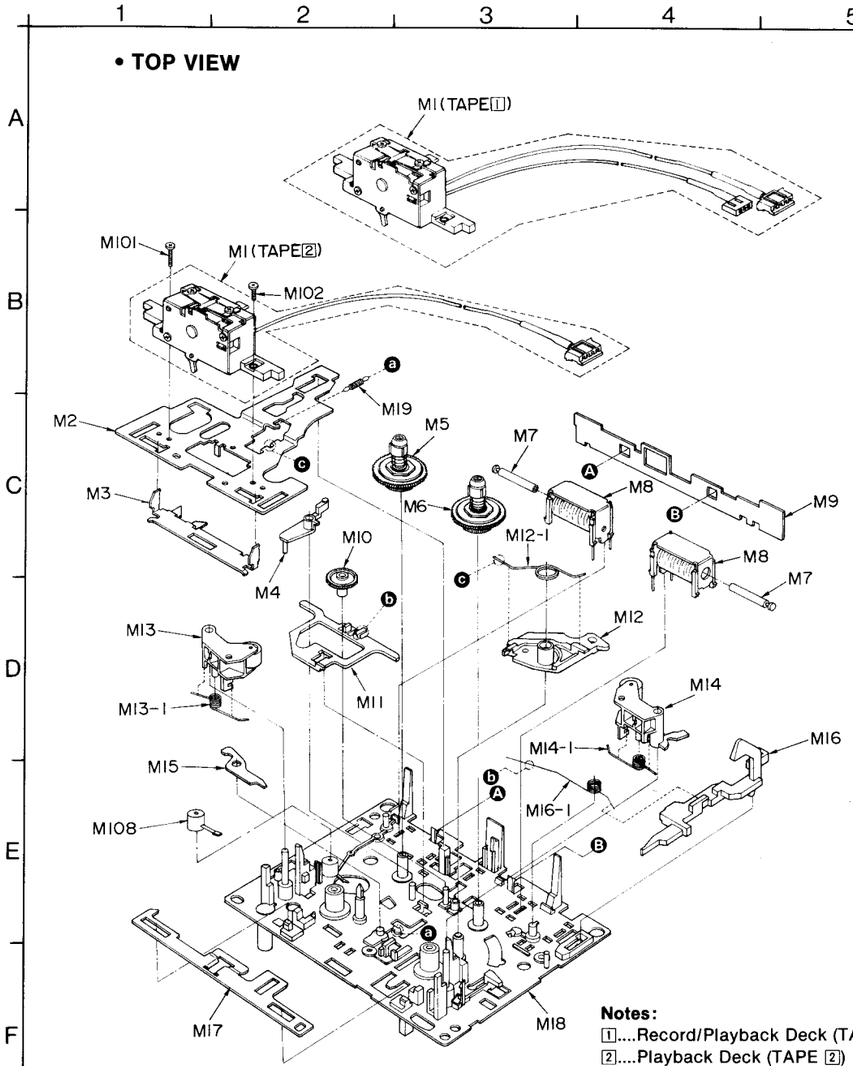


rews (2×5)mm and the
n.
d)×4.
10

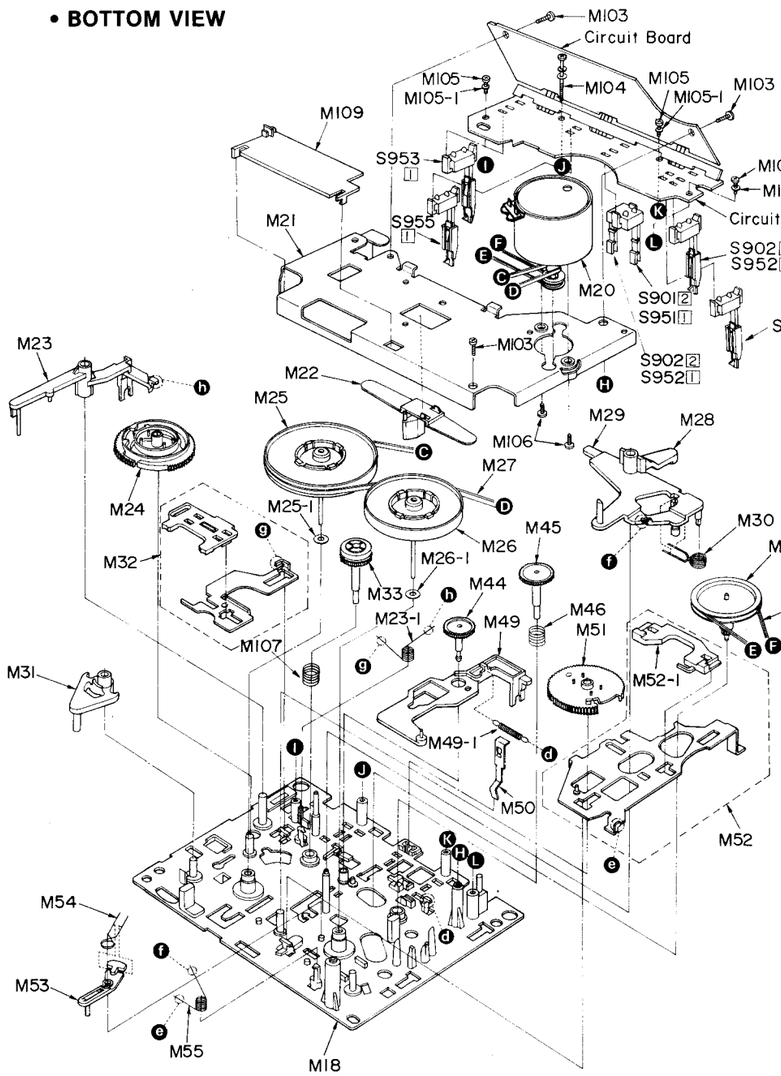
LOCATION



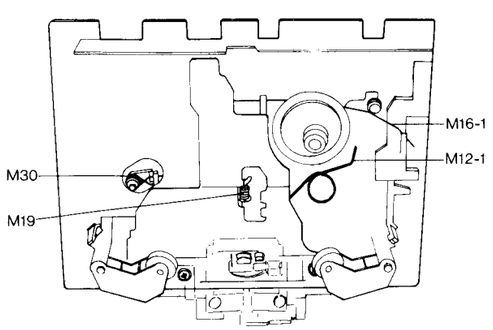
MECHANISM PARTS LOCATION

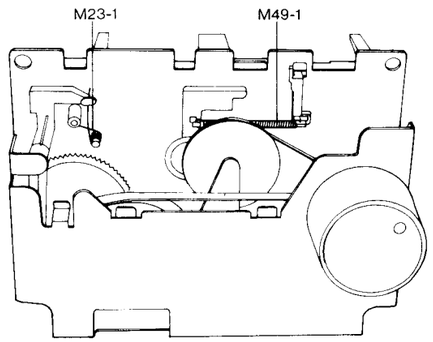


Notes:
1....Record/Playback Deck (TAPE 1)
2....Playback Deck (TAPE 2)



■ SPRING PARTS LOCATION





Specifications

Playback torque	40^{+20}_{-12} g•cm
Fast Forward torque	90^{+35}_{-25} g•cm
Rewind torque	90^{+35}_{-25} g•cm
Takeup tension	more than 90g
Pressure of pressure roller	210±30g
Wow and flutter	Less than 0.08% (WRMS)

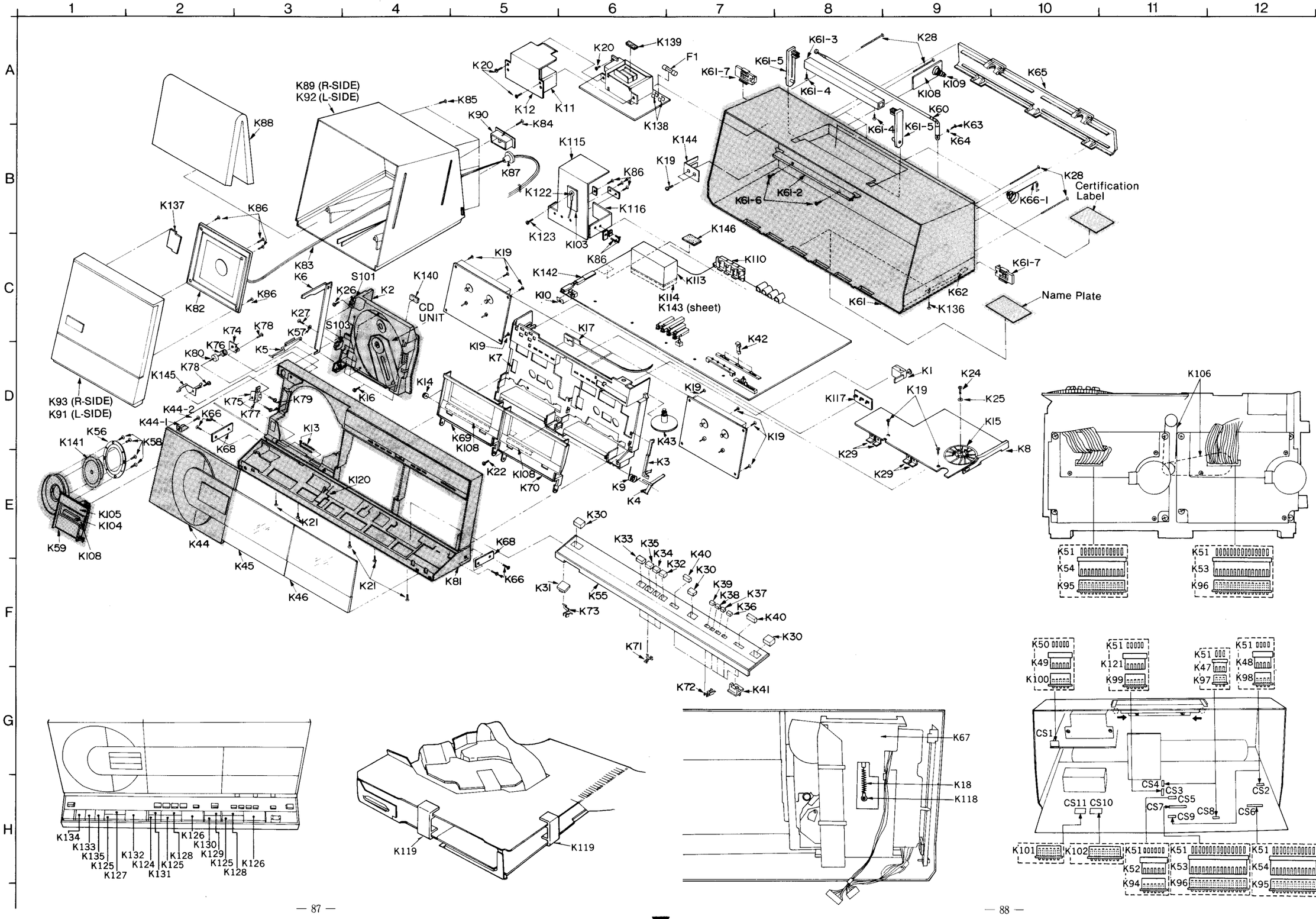
Mechanism Operation: Full Auto Stop.

REPLACEMENT PARTS LIST

The color name in parentheses ( ) in the parts list is the color of that part.

Ref. No.	Part No.	Part Name & Description
		MECHANICAL PARTS
M 1	RMDG0012Z	Head Block Ass'y (Tape [2]: Play Deck)
M 1	RMDG0013Z	Head Block Ass'y (Tape [1]: REC/Play Deck)
M 2	RUA9029X	Head Base
M 3	RUB342Z	Pinch Roller Change Rod
M 4	RUB347Z	Arm, Take Up
M 5	RDMG0002Z	Reel Table Ass'y (Reverse)
M 6	RDMG0001Z	Reel Table Ass'y (Forward)
M 7	RUB358Z	Shaft, Plunger Ass'y
M 8	RUEG0005Z	Plunger Ass'y
M 9	RUB344Z	Lever, Switch
M 10	RDG5772Z	Gear, Take Up Relay Gear
M 11	RUB353Z	Brake Rod
M 12	RUBG0001Z	Main Lever Ass'y
M 12-1	RUW14Z	Spring, Main Lever Ass'y
M 13	RUBG0007Z	Pinch Roller Ass'y (Forward)
M 13-1	RUW13Z	Spring, Pinch Roller Ass'y (Forward)
M 14	RUBG0006Z	Pinch Roller Ass'y (Reverse)
M 14-1	RUW12Z	Spring, Pinch Roller Ass'y (Reverse)
M 15	RUB343Z	Lever, FF
M 16	RUB414Z	Cassette Lock Rod
M 16-1	RUW17Z	Spring, Cassette Lock Rod
M 17	RUB341Z	FR Change Rod
M 18	RUAG0001Z	Mecha Chassis Ass'y
M 19	RUD9Z	Spring, Head Base
M 20	RJGQ0001Z	DC Motor Ass'y
M 21	RUL734Z	Bracket, Flywheel
M 22	RMD5001Z	Spacer
M 23	RUB350Z	Lever, Main Control
M 23-1	RUW10Z	Spring, Main Control Lever
M 24	RDG5776Z	Gear, Main
M 25	RDWG0001Z	Flywheel Ass'y (Reverse)
M 25-1	QBK92123	Whasher, Flywheel Ass'y (REverse)
M 26	RDWG0002Z	Flywheel Ass'y (Forward)
M 26-1	QBK92124	Whasher, Flywheel Ass'y (Forward)
M 27	RDV43Z	Belt, Main
M 28	RUB346Z	Arm, FF
M 29	RUB348Z	Lever, FF Spring
M 30	RUW9Z	Spring, FF Arm
M 31	RUB354Z	Arm, FR Select
M 32	RUBG0003Z	FR Rod Ass'y
M 33	RDGG0003Z	Reel Table Gear Ass'y
M 44	RDG5773Z	Gear, FF Relay Gear
M 45	RDG5769Z	Gear, Reel Table
M 46	RUQ10Z	Spring, Back Tension
M 47	RDRG0001Z	Main Pulley Ass'y
M 48	RDV42Z	Belt, FF
M 49	RUB349Z	Lever, Sub Control
M 49-1	RUD8Z	Spring, Sub Control Lever
M 50	RUS609Z	Spring, Cassette Pressure
M 51	RDG5775Z	Gear, Sub
M 52	RUBG0004Z	FF Rod Ass'y
M 52-1	RUB345Z	FF Select Rod
M 53	RUB359Z	Lever, Take Up Change
M 54	RUW15Z	Spring, Take Up Change Lever
M 55	RUW8Z	Spring, FF Rod Ass'y
M 101	XTN2+8B	Screw, Head Block Ass'y M'tg
M 102	XTN2+5B	Screw, Head Block Ass'y M'tg
M 103	XTN26+7B	Screw, Circuit Board, Flywheel Bracket M'tg
M 104	XYC2+FF15	Screw, Circuit Board M'tg
M 105	XTN2+5B	Screw, Circuit Board M'tg
M 105-1	XWG2	Washer, Circuit Board M'tg
M 106	XSN26+3	Screw, DC Motor Ass'y M'tg
M 107	RUQ30Z	Cushion
M 108	RNZ1Z	Damper Arm
M 109	RUV751Z	Holder, Lead Wire

CABINET PARTS LOCATION

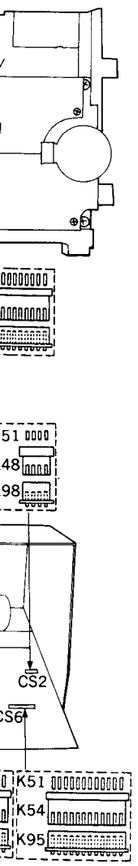


REPLACEMENT PARTS LIS

Important safety notice
Components identified by ⚠ mark
characteristics important for safety.
When replacing any of these comp
only manufacturer's specified parts.

Ref. No.	Part No.	Part
	CABINET PAR	
K 1	**RSE204Z**	Tape C
K 2	**RUA676Z**	Chassis
K 3	**RUB415Z**	Connec Eject
K 4	**RUB416Z**	Lever, C
K 5	**RUB417Z**	Lever, N
K 6	**RUB418Z**	Lever, N
K 7	**RZAXCD70J**	Chassis
K 8	**RHR3071Z**	Rack He
K 9	**RUW57Z**	Spring,
K 10	**RUV745Z**	Switch
K 11	**RMC1049Z**	Shild Pl
K 12	**RMC1052Z**	Shild Pl
K 13	**RDF3088Z**	Shaft, N
K 14	**RDG5709Z**	Gear, C
K 15	**RDG5904Z**	Dial Dra
K 16	**XQN17 + A4FZ**	Screw (M'tg)
K 17	**RZPXCD70J**	Dial Po
K 18	**RUD45Z**	Spring,
K 19	**XTV3 + 10G**	Tapping (Mecha M'tg)
K 20	**XTV3 + 12G**	Tapping (Power
K 21	**XTV3 + 16GFZ**	Tapping (Operat
K 22	**XTV3 + 25G**	Tapping (Mecha
K 23	**XTN2 + 8G**	Tapping (Dial Po
K 24	**XSN26 + 5**	Screw (M'tg)
K 25	**XWA26B**	Washer
K 26	**XQN17 + AJ5**	Screw (
K 27	**XQN2 + AJ7**	Screw (
K 28	**XTN3 + 60G**	Tapping (Front C
K 29	**RBC845Z**	Button,
K 30	**RBC846Z**	Button,
K 31	**RBC847Z**	Button,
K 32	**RBC848W**	Functio (AUX)/(
K 33	**RBC848X**	Functio
K 34	**RBC848Y**	Functio
K 35	**RBC848Z**	Functio (Tape)/(
K 36	**RBC849V**	Reverse /(B
K 37	**RBC849W**	Reverse /(B
K 38	**RBC849X**	Reverse /(B
K 39	**RBC849Y**	Reverse /(B
K 40	**RBC849Z**	Dolby/B
K 41	**RBD375Z**	Volume
K 42	**RBD376Z**	Slide Kn (Bass/T
K 43	**RBT259Z**	Tuning
K 44	**RYP3XCD70M**	CD Com Assemb
K 44-1	**RUL793Z**	Holder, Cover

12 13 14 15 16 17 18 19



REPLACEMENT PARTS LIST

Important safety notice
Components identified by ⚠ mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's specified parts.

The color name in parentheses ( ) in the parts list is the color of that part.

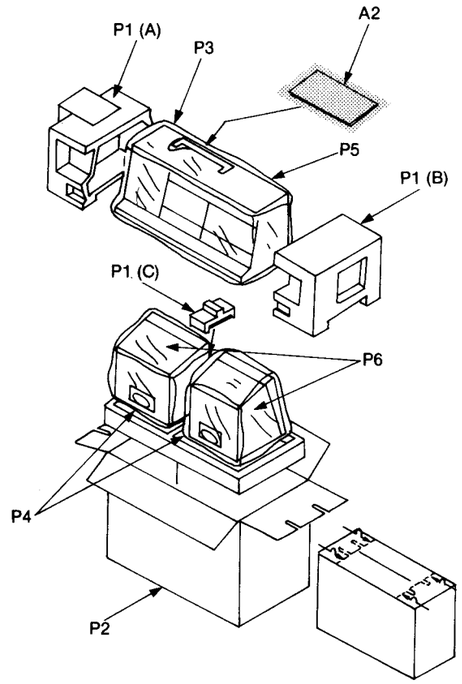
Ref. No.	Part No.	Part Name & Description
		CABINET PARTS
K 1	**RSE204Z**	Tape Counter
K 2	**RUA676Z**	Chassis, CD Player
K 3	**RUB415Z**	Connection Lever, Cassette Eject
K 4	**RUB416Z**	Lever, Cassette Eject
K 5	**RUB417Z**	Lever, Magnet Holder Open
K 6	**RUB418Z**	Lever, Magnet Holder Lock
K 7	**RZAXCD70J**	Chassis Assembly
K 8	**RHR3071Z**	Rack Holder
K 9	**RUW57Z**	Spring, Cassette Eject
K 10	**RUV745Z**	Switch Cover
K 11	**RMC1049Z**	Shild Plate (A)
K 12	**RMC1052Z**	Shild Plate (B)
K 13	**RDF3088Z**	Shaft, Magnet Holder
K 14	**RDG5709Z**	Gear, Cassette Holder
K 15	**RDG5904Z**	Dial Dram
K 16	**XQN17+A4FZ**	Screw ⊕1.7×4 (Chassis M'tg)
K 17	**RZPXCD70J**	Dial Point Assembly
K 18	**RUD45Z**	Spring, Lead Wire Holder
K 19	**XTV3+10G**	Tapping Screw ⊕3×10 (Mechanism, Tuner P.C.B. M'tg)
K 20	**XTV3+12G**	Tapping Screw ⊕3×12 (Power Supply P.C.B. M'tg)
K 21	**XTV3+16GFZ**	Tapping Screw ⊕3×16 (Operation Panel M'tg)
K 22	**XTV3+25G**	Tapping Screw ⊕3×25 (Mechanism M'tg)
K 23	**XTN2+8G**	Tapping Screw ⊕2×8 (Dial Point Guide M'tg)
K 24	**XSN26+5**	Screw ⊕2.6×5 (Dial Dram M'tg)
K 25	**XWA26B**	Washer ø2.6 (Dial Dram M'tg)
K 26	**XQN17+AJ5**	Screw ⊕1.7×5 (S101 M'tg)
K 27	**XQN2+AJ7**	Screw ⊕2×7 (S102 M'tg)
K 28	**XTN3+60G**	Tapping Screw ⊕3×60 (Front Cabinet M'tg)
K 29	**RBC845Z**	Button, Band/Mode (Black)
K 30	**RBC846Z**	Button, Eject (Gray)
K 31	**RBC847Z**	Button, Power (Silver)
K 32	**RBC848W**	Function Button (AUX)/(Black)
K 33	**RBC848X**	Function Button (CD)/(Black)
K 34	**RBC848Y**	Function Button (TU.)/(Black)
K 35	**RBC848Z**	Function Button (Tape)/(Black)
K 36	**RBC849V**	Reverse Mode Button /(Black)
K 37	**RBC849W**	Reverse Mode Button /(Black)
K 38	**RBC849X**	Reverse Mode Button /(Black)
K 39	**RBC849Y**	Reverse Mode Button /(Black)
K 40	**RBC849Z**	Dolby/Blank Button (Black)
K 41	**RBD375Z**	Volume Knob (Silver)
K 42	**RBD376Z**	Slide Knob (Bass/Treble/Balance)/(Black)
K 43	**RBT259Z**	Tuning Knob (Black)
K 44	**RYP3XCD70M**	CD Compartment Cove Assembly
K 44-1	**RUL793Z**	Holder, CD Compartment Cover
K 44-2	**XQN2+A4**	Screw ⊕2×4 (Cover Holder M'tg)
K 45	**RYP1XCD70M1**	Cassette Panel-L Ass'y (Tape [1])
K 46	**RYP2XCD70M1**	Cassette Panel-R Ass'y (Tape [2])
K 47	**RJS3L4Z**	Socket (3P/CS4, 8)
K 48	**RJS4L4Z**	Socket (4P/CS2, 9)
K 49	**RJS5L3Z**	Socket (5P/CS1)
K 50	**RJT707Z**	Contact-A
K 51	**RJT807Y**	Contact
K 52	**RJS6L4Z**	Socket (6P/CS5)
K 53	**RJS15L4Z**	Socket (15P/CS7, CN951)
K 54	**RJS12L4Z**	Socket (12P/CS6, CN901)
K 55	**RYEXCD70M**	Operation Panel Ass'y (Black)
K 56	**RME401Z**	Plate, Magnet Holding
K 57	**XWE2X4BW**	Washer (S103 M'tg)
K 58	**XQN2+AJ4FN**	Screw ⊕2×4
K 59	**RKE543Z**	Clamper Holder
K 60	**XEARR225EAK**	Telescopic Antenna
K 61	**RYF1XCD70M**	Rear Cabinet Ass'y (Black)
K 61-1	**RJC931Z**	Battery Tarminal (+/−)
K 61-2	**RUL804Z**	Angle, Handle Reinforcement
K 61-3	**RKX349Z**	Pipe, Handle (Black)
K 61-4	**XTC3+10CFZ**	Tapping Screw ⊕3×10 (Handle M'tg)
K 61-5	**RKX350Z**	Arm, Handle (Black)
K 61-6	**XTV3+10G**	Tapping Screw ⊕3×10 (Reinforcement Angle M'tg)
K 61-7	**RGE88Z**	Lock Plate, Speaker Box (Black)
K 62	**RJT1040Z**	Earth Terminal
K 63	**XSN3+15BVS**	Screw ⊕3×15 (Antenna M'tg)
K 64	**XWA3BFZ**	Washer ø3 (Antenna M'tg)
K 65	**RKK213Z**	Battery Cover (Black)
K 66	**XSS3+6BVS**	Screw ⊕3×6 (Cabinet Reinforcement Angle M'tg)
K 67	**RUV750Z**	Lead Wire Holder
K 68	**RUL803Z**	Holder, Cabinet
K 69	**RYQ1XCD70J**	Cassette Holder Ass'y (Tape [1])/(Black)
K 70	**RYQ2XCD70J**	Cassette Holder Ass'y (Tape [2])/(Black)
K 71	**RUB419Z**	Changing Lever, Operation
K 72	**RUB420Z**	Changing Lever, Dolby/B•S/Reverse Mode
K 73	**RUB421Z**	Changing Lever, Power
K 74	**RUL795Z**	Angle, Open Button
K 75	**RUL796Z**	Angle, CD Dumper Gear
K 76	**RUW58Z**	Spring, Eject Button
K 77	**RDG5024Z**	CD Dumper Gear
K 78	**XTV3+10G**	Tapping Screw ⊕3×10 (Dumper Gear Angle M'tg)
K 79	**XQN2+A4**	Screw ⊕2×4 (CD Dumper Gear M'tg)
K 80	**RHR1306Z**	Pin, CD Open
K 81	**RYM1XCD70M**	Front Cabinet Ass'y (Black)
K 82	**EAS10S01SA**	Speaker (Woofer)
K 83	**RJE147Z**	Speaker Cord
K 84	**XTV3+12GFY**	Tapping Screw ⊕3×12 (Cord Holder M'tg)
K 85	**XTV3+18G**	Tapping Screw ⊕3×18 (Speaker M'tg)
K 86	**XTV3+8G**	Tapping Screw ⊕3×8 (Speaker M'tg)
K 87	**RHG3011Z**	Bushing, SP. Cord
K 88	**RHS722Z**	Acoustic Material
K 89	**RKF810Z**	Rear Cabinet-R, SP (Black)
K 90	**RKE512Z4**	Cord Holder (Black)
K 91	**RYM3XCD70M**	Speaker Grill-L Ass'y (Black)
K 92	**RKF810Y**	Rear Cabinet-L, SP (Black)
K 93	**RYM2XCD70M**	Speaker Grill-R Ass'y (Black)
K 94	**RJP6G10Z**	Plug (6P/CS5)
K 95	**RJP12G10Z**	Plug (12P/CS6, CN901)
K 96	**RJP15G10Z**	Plug (15P/CS7, CN951)
K 97	**RJP3G10Z**	Plug (3P/CS4, 8)
K 98	**RJP4G10Z**	Plug (4P/CS2, 9)
K 99	**RJP5G10Z**	Plug (5P/CS3)
K 100	**RJP5G4Y**	Plug (5P/CS1)
K 101	**RJP6G4Y**	Plug (6P/CS11)
K 102	**RJP8G4Y**	Plug (8P/CS10)
K 103	**RHR3078Z**	Sheet
K 104	**RJS24Q9Z**	Socket (24P/CS12)
K 105	**EDD062C53A3P**	LCD
K 106	**QDB0310**	Counter/Relay Belt
K 108	**RUP2038Y**	P.C. Board (LCD, Battery, Cassette Lid)
K 109	**RJC511Z**	Battery Spring (−)
K 110	**QJT1104**	Terminal. EXT Speaker
K 113	**RMC1050Z**	Shield Plate
K 114	**RMC1051Z**	Shield Plate
K 115	**RMY212Z**	Heat Sink (IC310, Q327)
K 116	**RMY213Z**	Heat Sink (IC311, Q330)
K 117	**RUP2076Z**	P.C. Board (LED)
K 118	**RJT207Z**	Lug Terminal
K 119	**RHR3087Z**	Spacer (P.C.B. Holding)
K 120	**RJT1043Z**	Earth Plate
K 121	**RJS5L4Z**	Socket (5P/CS3)
K 122	**RJT202B**	Lug Terminal
K 123	**XTV3+6B**	Tapping Screw ⊕3×6 (Lug Terminal M'tg)
K 124	**RBC850Z**	Record Mute Button (Gray)
K 125	**RBC851Z**	Stop Button (Silver)
K 126	**RBC852Z**	Play Button (Silver)
K 127	**RBC853Y**	CD Skip Button (Silver)
K 128	**RBC853Z**	Fast Button (Silver)
K 129	**RBC854Z**	Dubbing (High) Button (Red)
K 130	**RBC855Z**	Dubbing (Normal) Button (Red)
K 131	**RBC856Z**	Record Stand-by Button (Red)
K 132	**RBC857Z**	CD Play/Pause Button (Silver)
K 133	**RBC858X**	Repeat/Button (Silver)
K 134	**RBC858Y**	Rem Time Button (Silver)
K 135	**RBC858Z**	Memo/Recall Button (Silver)
K 136	**XYN2+E6FZ**	Screw ⊕2×6 (Earth Terminal M'tg)
K 137	**EFBS21A41HA2**	Speaker (Tweeter)
K 138	**QTF1054**	Fuse Holder ⚠
K 139	**RHR3090Z**	Rubber Cushion (for T302)
K 140	**RHR3086Z**	Rubber Cushion (for CD UNIT)
K 141	**RZUXCD70M**	Magnet Ass'y
K 142	**RMX313Z**	Cover (for Main P.C.B.)
K 143	**RUV761**	Shield Plate
K 144	**RUL823Z**	Reinforcement Plate, Battery
K 145	**RUS670Z**	Earth Spring (for CD UNIT)
K 146	**RHR3093Z**	Rubber Cushion (for Main P.C.B.)

RX-CD70 IMPORTANCE PARTS

When replacing the following components, use only manufacturer's specified parts in the shaded area of cabinet parts location and below figure.

Parts Name	Remarks
C.D. Unit	
Safety Interlock Switch (Laser Power Switch)	S101
Safety Interlock Switch (Close Switch)	S103
Lock Bracket (Switch Terminal)	K44-1
Operating Instruction	A2
Certification Label	
Name Plate	
Front Cabinet Ass'y	K81
Disc Holder Cover	K44
Clamp Holder Ass'y	K59
Chassis C.D. M'tg	K2
Rear Cabinet Ass'y	K61
Shaft, C.D. Disc Holder Cover	K13

ACCESSORY AND PACKING MATERIALS



* A1 (in the Battery Compartment)

REPLACEMENT PARTS LIST

Important safety notice
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When replacing any of these components, use only manufacturer's specified parts.

Ref. No.	Part No.	Part Name & Description
		ACCESSORIES
A 1	**RJA22X**	Power Cord ⚠
A 2	**RQX4711Z**	Operating Instruction
		PACKINGS
P 1	**RPN9516Z**	Pad Completion
P 2	**RPK2181Z**	Gift Box
P 3	**RPP728Z**	Protection Cover (for UNIT)
P 4	**RPP685Z**	Poly Bag (for Speaker-R)
P 5	**RPH509Z**	Poly Sheet (for UNIT)
P 6	**RPH510Z**	Poly Sheet (for Speaker)

GAD
H.M
Printed in Japan (H)

ORDER NO. GAD8604547S0
A6

Service Manual

Supplement

Radio Cassette

Portable Stereo Component System **RX-CD70**

COMPACT disc DIGITAL AUDIO

DIGITAL

This is the Service Manual for the all areas.

Please use this manual along with the original service manuals for the below models.

Area	Order No.	Area	Order No.
[M]... For U.S.A.	GAD8510541C1	[C]... For Canada	GAD8601508A1
[Z]... For all European areas except United Kingdom, F.R. Germany. [E]... For United Kingdom. [G]... For F.R. Germany.	GAD8601504A2	[X]... For Asia, Latin America, Middle East and Africa areas. [L]... For Australia.	GAD8512558C3
[ME]... For AAFES EUROPE. [MF]... For AAFES PACIFIC.	GAD8602513A4		

Notes:
- Traverse motor block and circuits of this unit were changed during the period of production in an attempt to improve the performance. This must be kept in mind when servicing.
- This supplement mentions only the after-change parts list, circuit diagram and P.C.B. diagram. For the adjustment procedures after change, refer to the Technical Information (Order No. HAD8602364T0).

CHANGES

■ REPLACEMENT PARTS LIST

Ref. No.	Change of Part No. Old	➡ New	Description	Remarks
TRAVERSE DECK PARTS				
60	SUWD4R	SDGD2R	Motor Block Ass'y	Change
62	SJGD1R			
VARIABLE RESISTOR				
VR991	——	EVML4GA00B53	Variable Resistor, 5kΩ (B)	Addition
RESISTORS				
R991, 992	——	ERJ6GMYJ102M	Chip Type Carbon, 1/4W, 1kΩ	Addition
CAPACITORS				
C321	——	ECQV1H104JZ	TF, 50V, 0.1μF	Addition
C991, 992	——	RCUV1H102KB	Chip Type Ceramic, 50V, 0.001μF	Addition
C993, 994	——	RCUV1H271JC	Chip Type Ceramic, 50V, 270pF	Addition

National / Panasonic

Matsushita Engineering and Service Company
50 Meadowland Parkway,
Secaucus. New Jersey 07094

Panasonic Hawaii Inc.
91-238 Kauhi St. Ewa Beach
P.O. Box 774
Honolulu, Hawaii 96808-0774

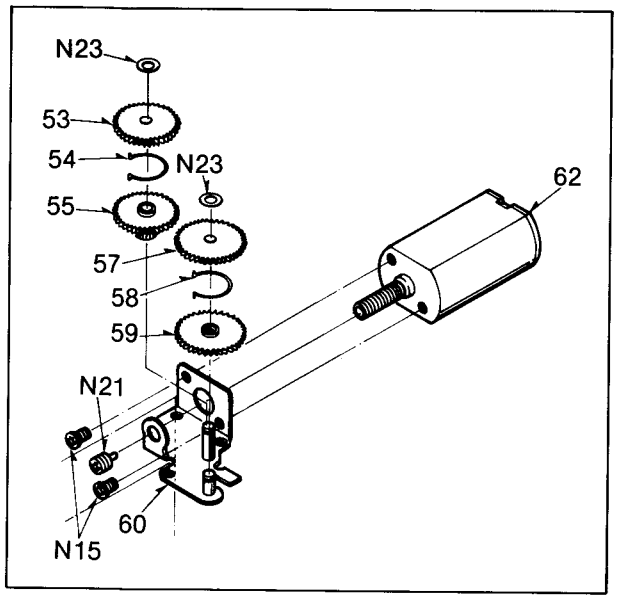
Panasonic Sales Company, Division of Matsushita Electric of Puerto Rico, Inc.
Ave, 65 De Infanteria, KM 9.7
Victoria Industrial Park
Carolina, Puerto Rico 00630

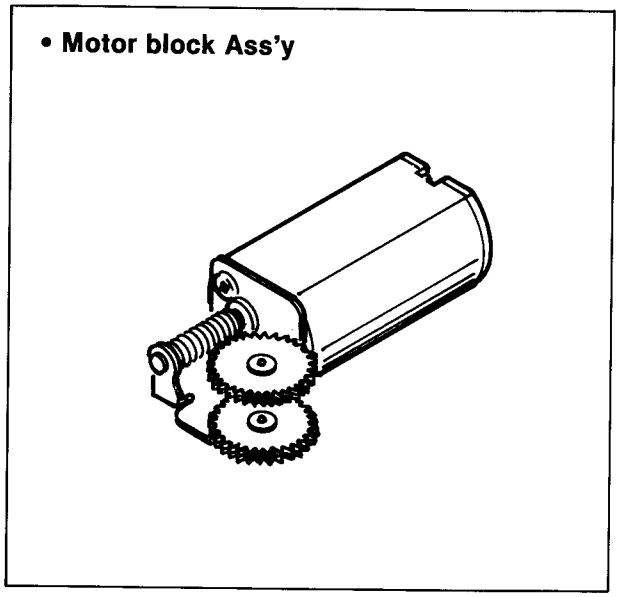
Matsushita Electric of Canada Limited
5770 Ambler Drive, Mississauga,
Ontario, L4W 2T3

Matsushita Electric Trading Co., Ltd.
P.O. Box 288. Central Osaka Japan

Supply of Motor Block

Motor block is supplied in ass'y to improve the serviceability.



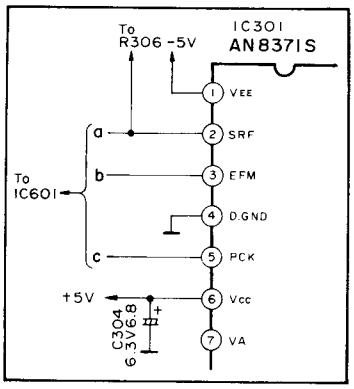


■ SCHEMATIC DIAGRAM

Capacitor and tracking offset compensation circuit are added in order to improve the playability.

Addition of Capacitor (C321)

(Old)



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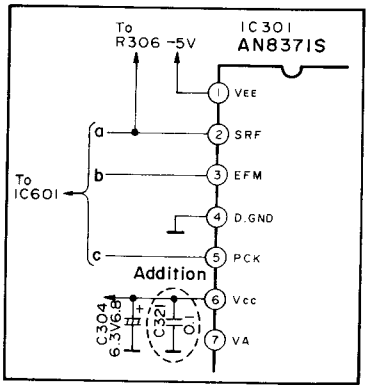
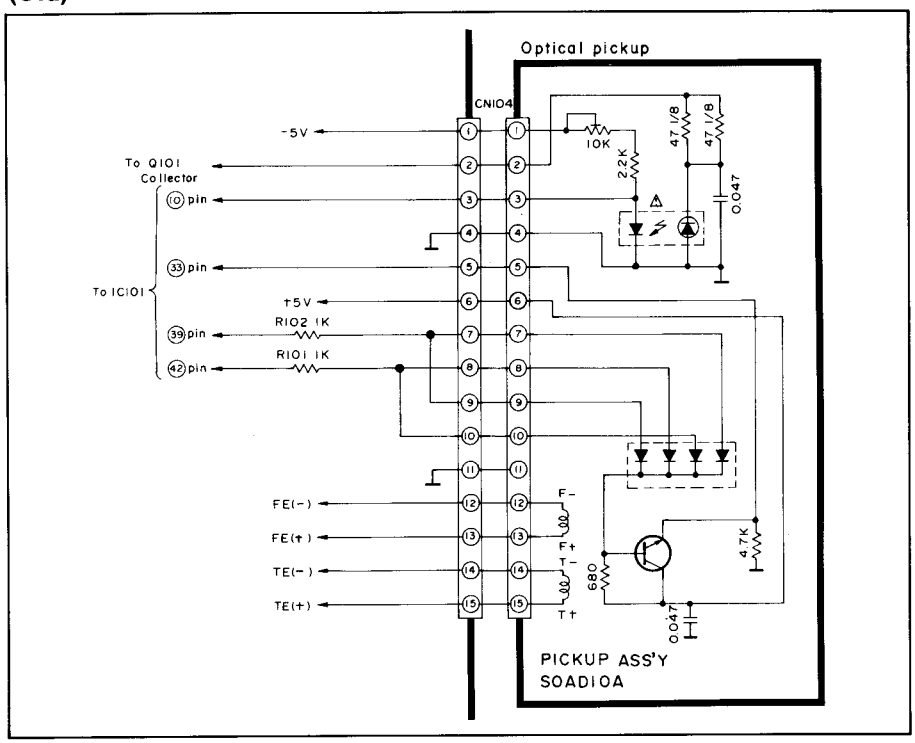


Addition of Tracking Offset Compensation Circuit

(Old)



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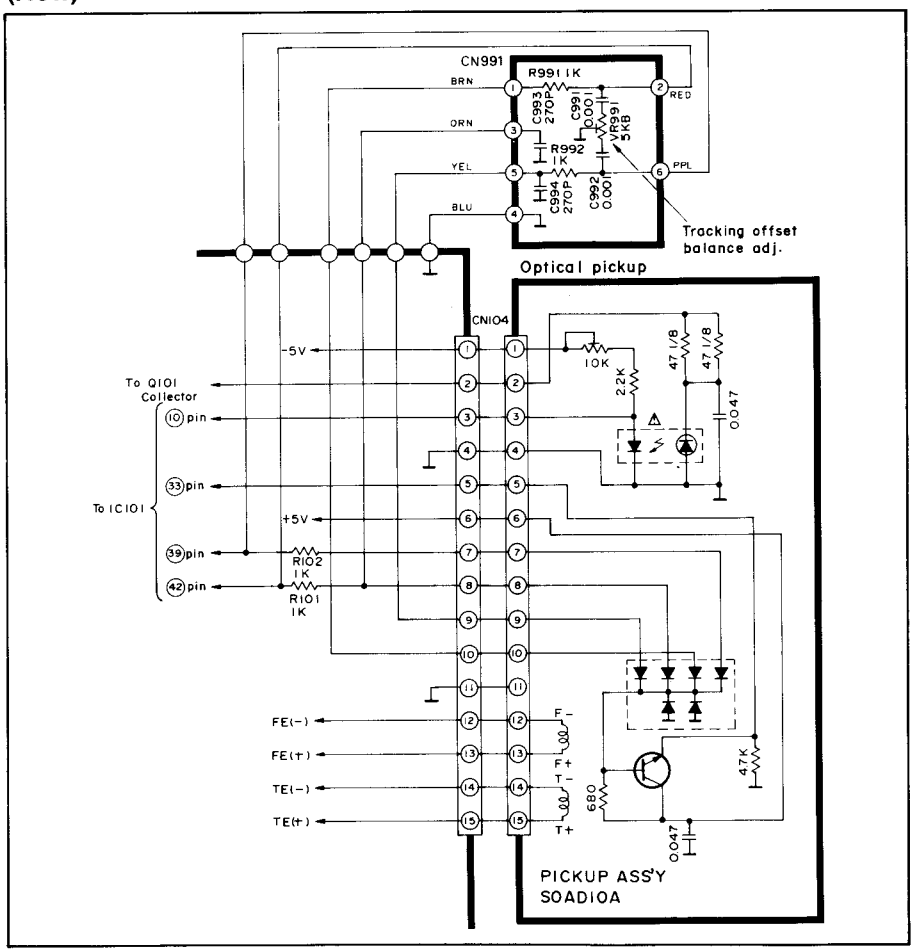
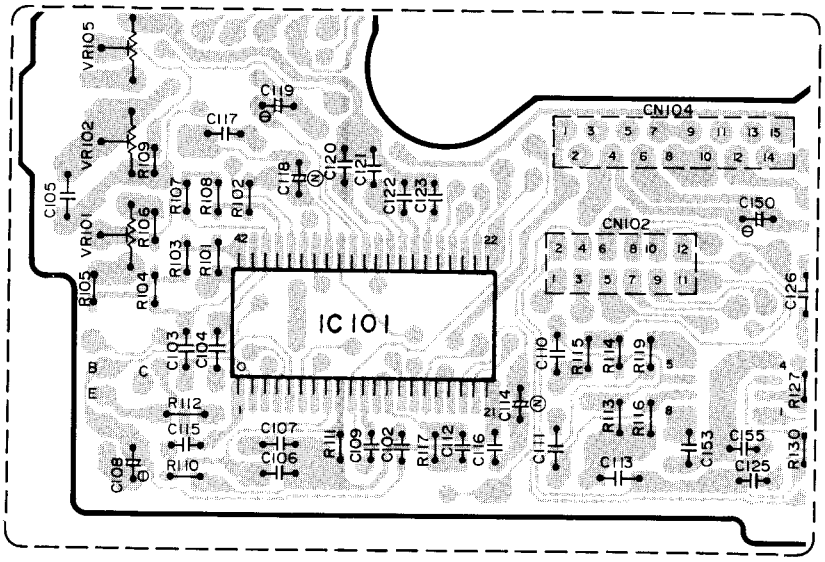


■ PRINTED CIRCUIT BOARD

Addition of Tracking Offset Compensation P.C.B.

(Old)



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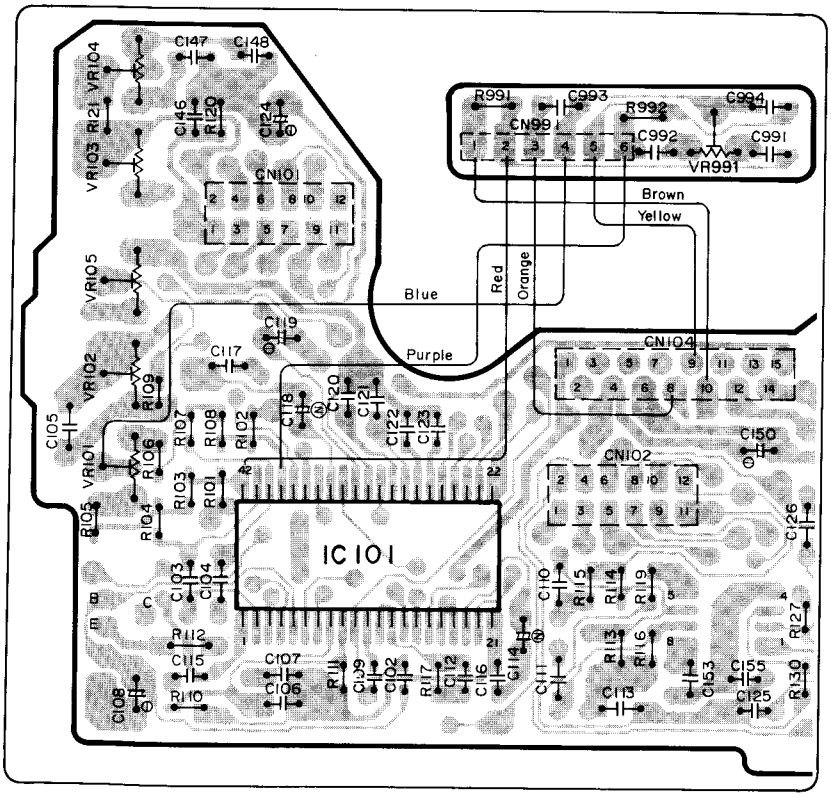
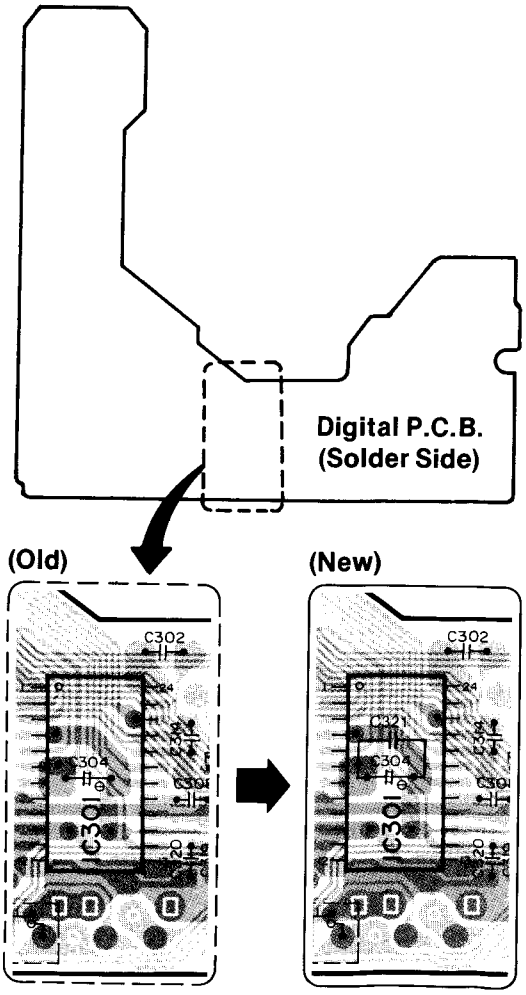


Addition of Capacitor (C321)



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ORDER NO. GAD8604547S0
A6

Service Manual

Supplement

Radio Cassette

Portable Stereo Component System **RX-CD70**

COMPACT disc DIGITAL AUDIO

DIGITAL

This is the Service Manual for the all areas.

Please use this manual along with the original service manuals for the below models.

Area	Order No.	Area	Order No.
[M]... For U.S.A.	GAD8510541C1	[C]... For Canada	GAD8601508A1
[Z]... For all European areas except United Kingdom, F.R. Germany. [E]... For United Kingdom. [G]... For F.R. Germany.	GAD8601504A2	[X]... For Asia, Latin America, Middle East and Africa areas. [L]... For Australia.	GAD8512558C3
[ME]... For AAFES EUROPE. [MF]... For AAFES PACIFIC.	GAD8602513A4		

Notes: • Traverse motor block and circuits of this unit were changed during the period of production in an attempt to improve the performance.
This must be kept in mind when servicing.
• This supplement mentions only the after-change parts list, circuit diagram and P.C.B. diagram.
For the adjustment procedures after change, refer to the Technical Information (Order No. HAD8602364T0).

CHANGES

■ REPLACEMENT PARTS LIST

Ref. No.	Change of Part No. Old	➡ New	Description	Remarks
TRAVERSE DECK PARTS				
60	SUWD4R	SDGD2R	Motor Block Ass'y	Change
62	SJGD1R			
VARIABLE RESISTOR				
VR991	——	EVML4GA00B53	Variable Resistor, 5kΩ (B)	Addition
RESISTORS				
R991, 992	——	ERJ6GMYJ102M	Chip Type Carbon, 1/4W, 1kΩ	Addition
CAPACITORS				
C321	——	ECQV1H104JZ	TF, 50V, 0.1μF	Addition
C991, 992	——	RCUV1H102KB	Chip Type Ceramic, 50V, 0.001μF	Addition
C993, 994	——	RCUV1H271JC	Chip Type Ceramic, 50V, 270pF	Addition

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Matsushita Engineering and Service Company
50 Meadowland Parkway,
Secaucus. New Jersey 07094

Panasonic Hawaii Inc.
91-238 Kauhi St. Ewa Beach
P.O. Box 774
Honolulu, Hawaii 96808-0774

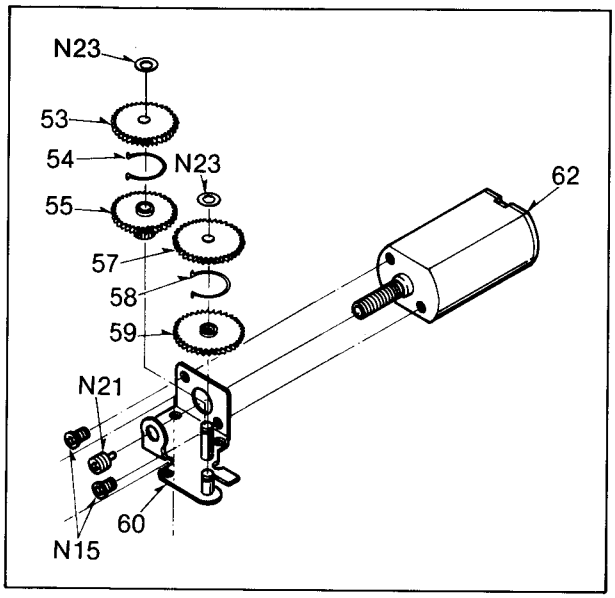
Panasonic Sales Company, Division of Matsushita Electric of Puerto Rico, Inc.
Ave, 65 De Infanteria, KM 9.7
Victoria Industrial Park
Carolina, Puerto Rico 00630

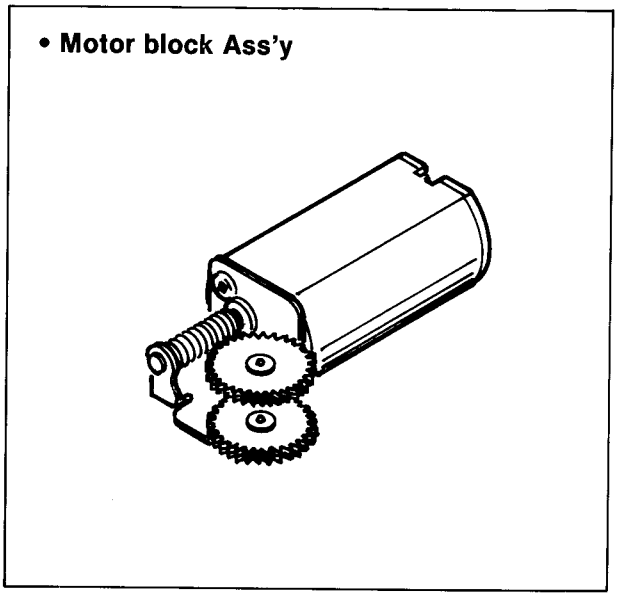
Matsushita Electric of Canada Limited
5770 Ambler Drive, Mississauga,
Ontario, L4W 2T3

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

Supply of Motor Block

Motor block is supplied in ass'y to improve the serviceability.



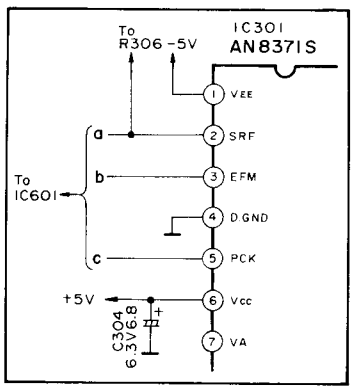


■ SCHEMATIC DIAGRAM

Capacitor and tracking offset compensation circuit are added in order to improve the playability.

Addition of Capacitor (C321)

(Old)



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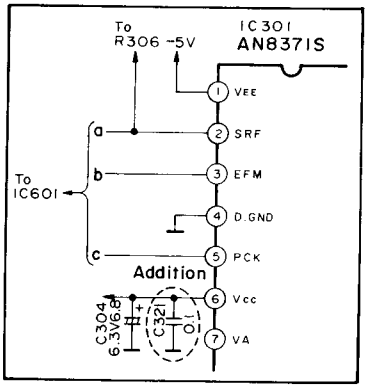
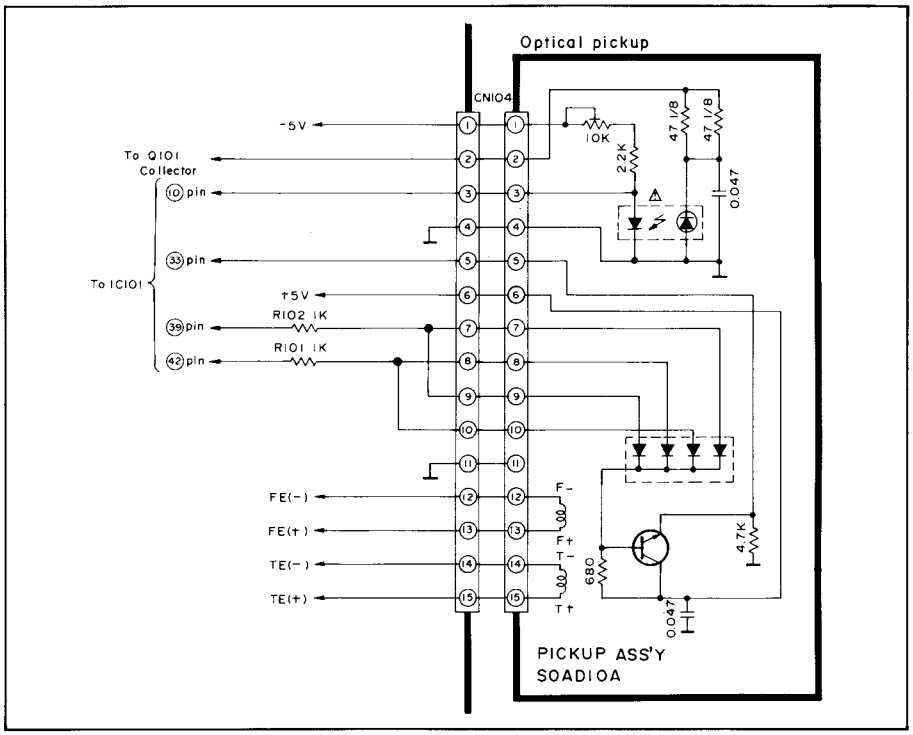


Addition of Tracking Offset Compensation Circuit

(Old)



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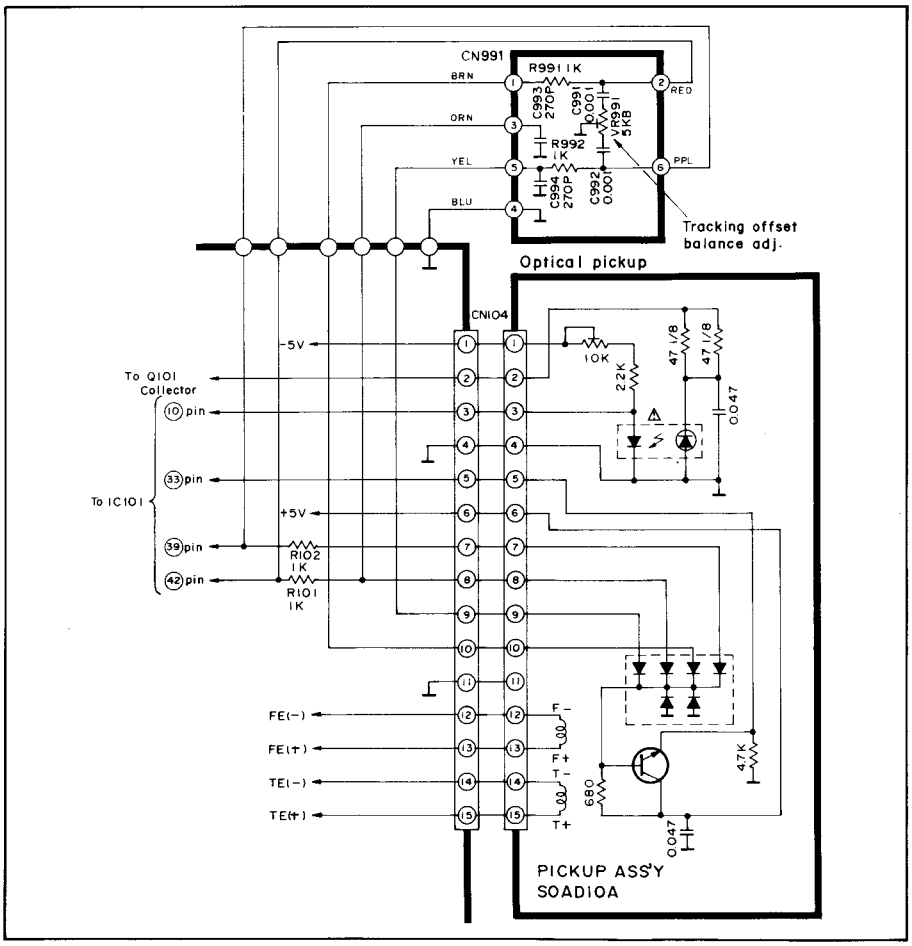
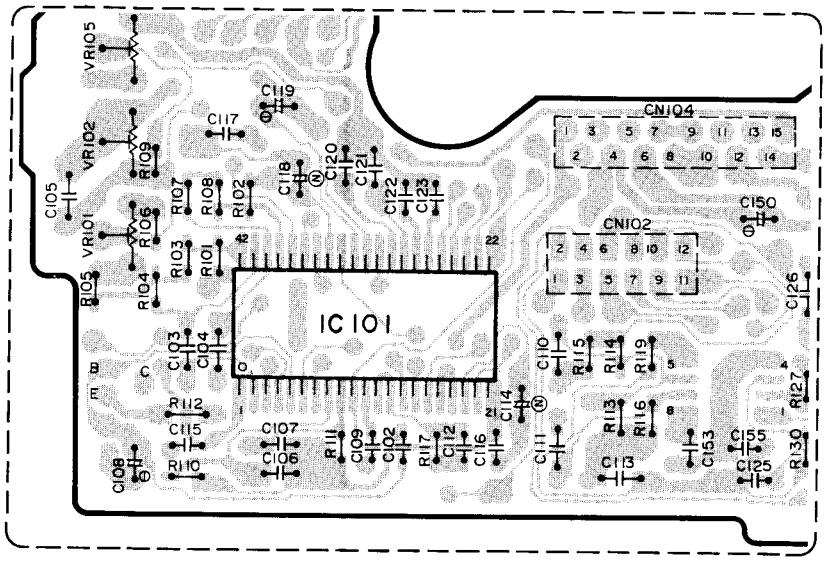
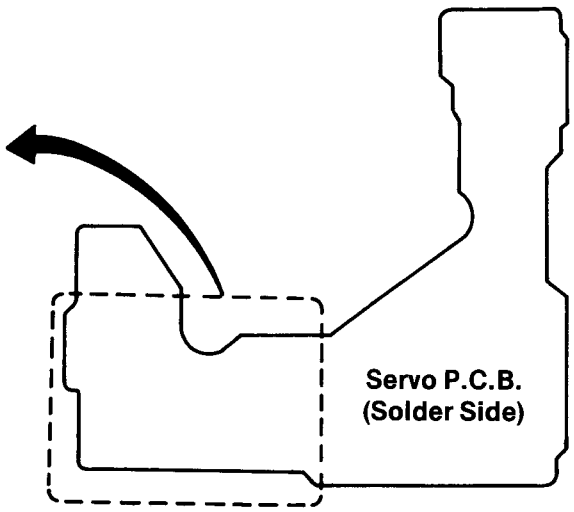


■ PRINTED CIRCUIT BOARD

Addition of Tracking Offset Compensation P.C.B.

(Old)





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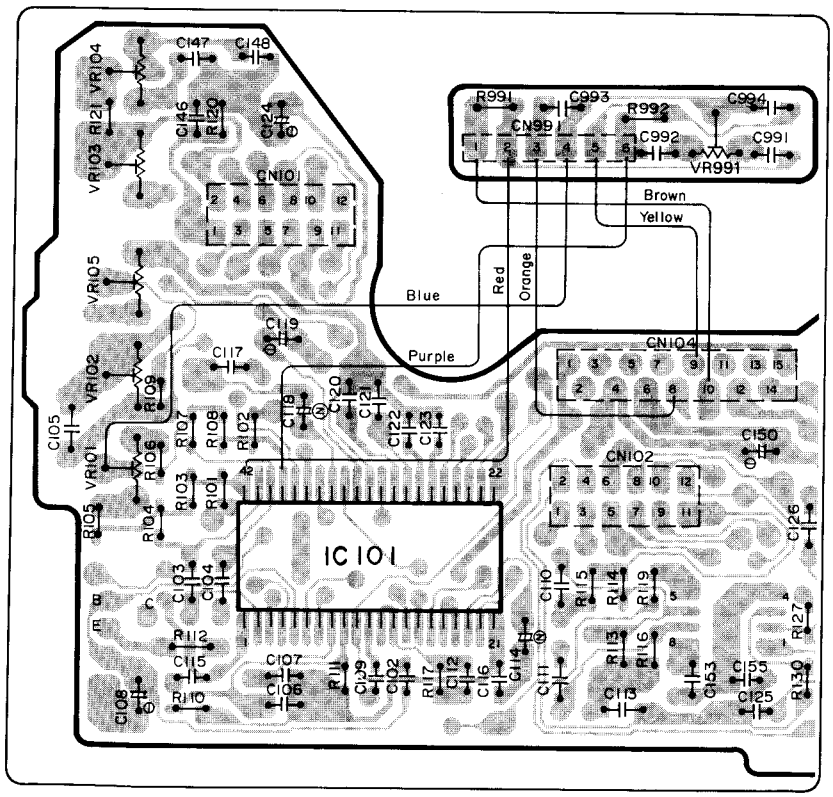
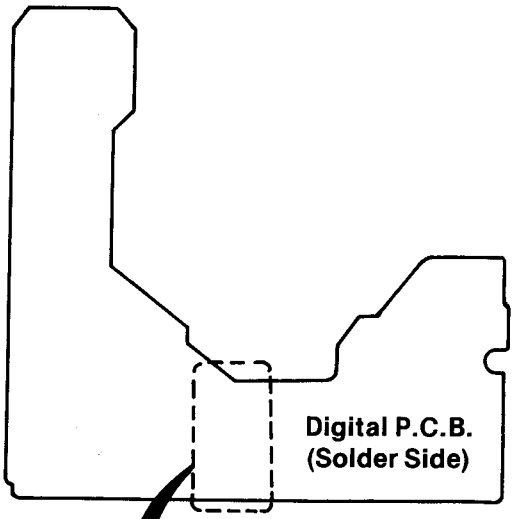


Addition of Capacitor (C321)



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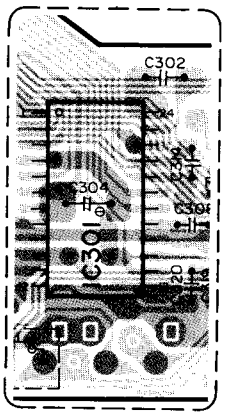

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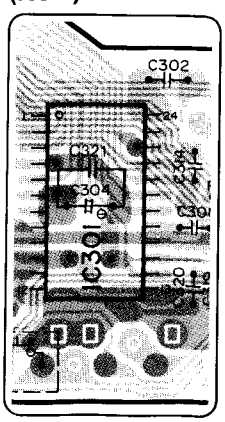

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ORDER NO. GAD8604547S0
A6

Service Manual

Supplement

Radio Cassette

Portable Stereo Component System

RX-CD70

COMPACT disc DIGITAL AUDIO

DIGITAL

This is the Service Manual for the all areas.

Please use this manual along with the original service manuals for the below models.

Area	Order No.	Area	Order No.
[M]... For U.S.A.	GAD8510541C1	[C]... For Canada	GAD8601508A1
[Z]... For all European areas except United Kingdom, F.R. Germany. [E]... For United Kingdom. [G]... For F.R. Germany.	GAD8601504A2	[X]... For Asia, Latin America, Middle East and Africa areas. [L]... For Australia.	GAD8512558C3
[ME]... For AAFES EUROPE. [MF]... For AAFES PACIFIC.	GAD8602513A4		

Notes:
- Traverse motor block and circuits of this unit were changed during the period of production in an attempt to improve the performance. This must be kept in mind when servicing.
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CHANGES

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RESISTORS				
R991, 992	——	ERJ6GMYJ102M	Chip Type Carbon, 1/4W, 1kΩ	Addition
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C321	——	ECQV1H104JZ	TF, 50V, 0.1μF	Addition
C991, 992	——	RCUV1H102KB	Chip Type Ceramic, 50V, 0.001μF	Addition
C993, 994	——	RCUV1H271JC	Chip Type Ceramic, 50V, 270pF	Addition

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50 Meadowland Parkway,
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91-238 Kauhi St. Ewa Beach
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Honolulu, Hawaii 96808-0774

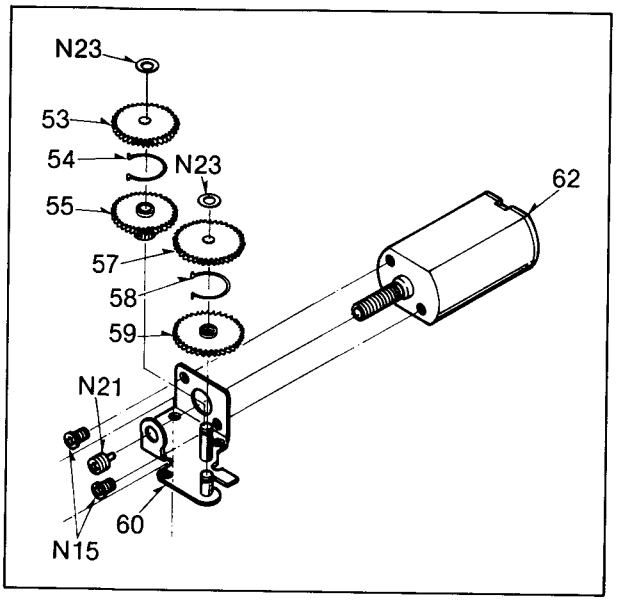
Panasonic Sales Company, Division of Matsushita Electric of Puerto Rico, Inc.
Ave, 65 De Infanteria, KM 9.7
Victoria Industrial Park
Carolina, Puerto Rico 00630

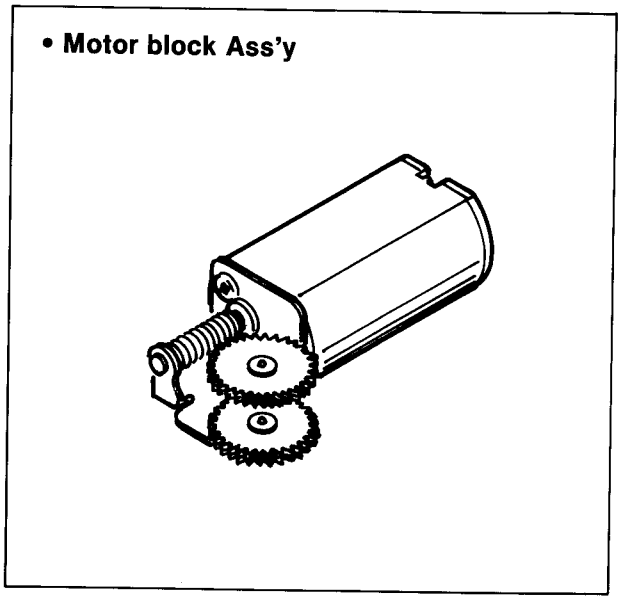
Matsushita Electric of Canada Limited
5770 Ambler Drive, Mississauga,
Ontario, L4W 2T3

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

Supply of Motor Block

Motor block is supplied in ass'y to improve the serviceability.



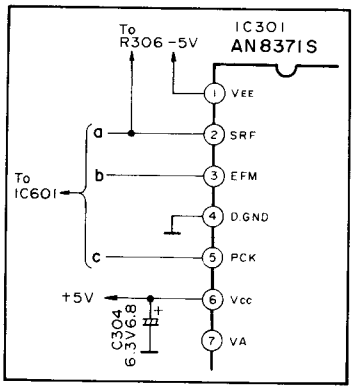


■ SCHEMATIC DIAGRAM

Capacitor and tracking offset compensation circuit are added in order to improve the playability.

Addition of Capacitor (C321)

(Old)



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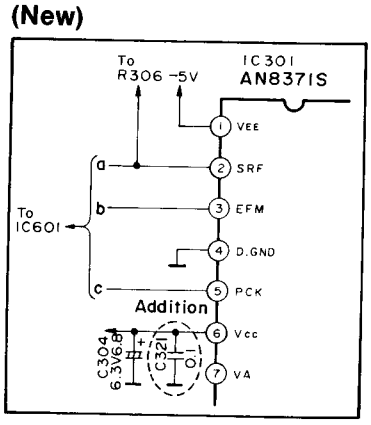
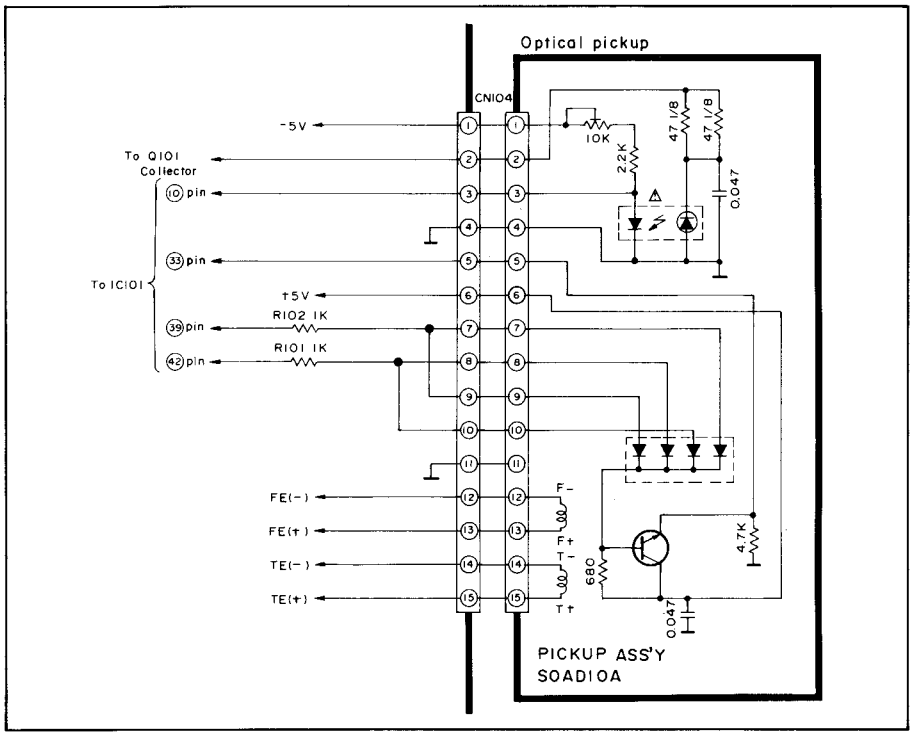


Addition of Tracking Offset Compensation Circuit

(Old)



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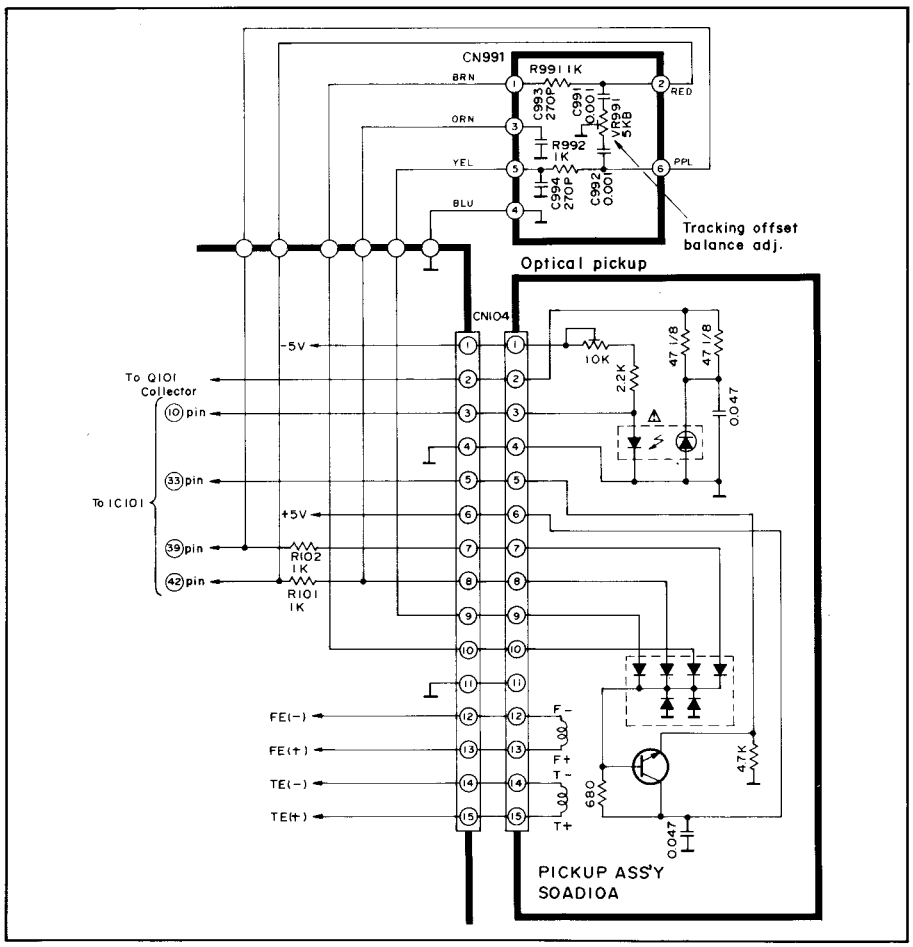
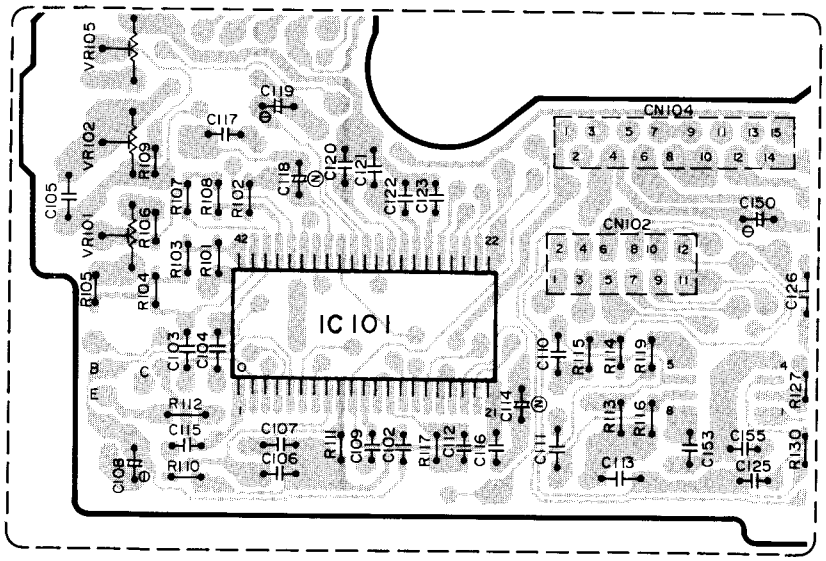
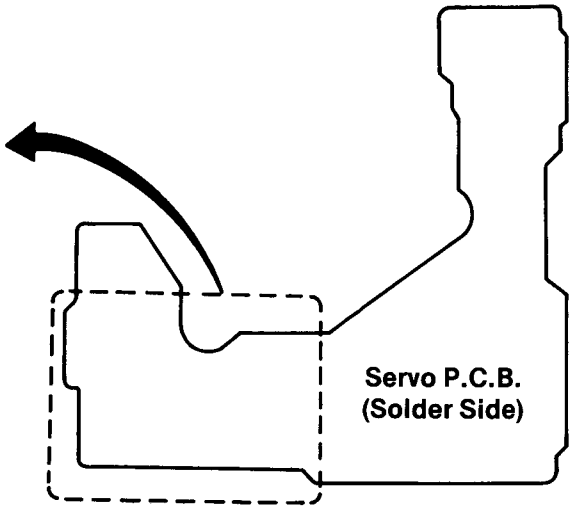


■ PRINTED CIRCUIT BOARD

Addition of Tracking Offset Compensation P.C.B.

(Old)





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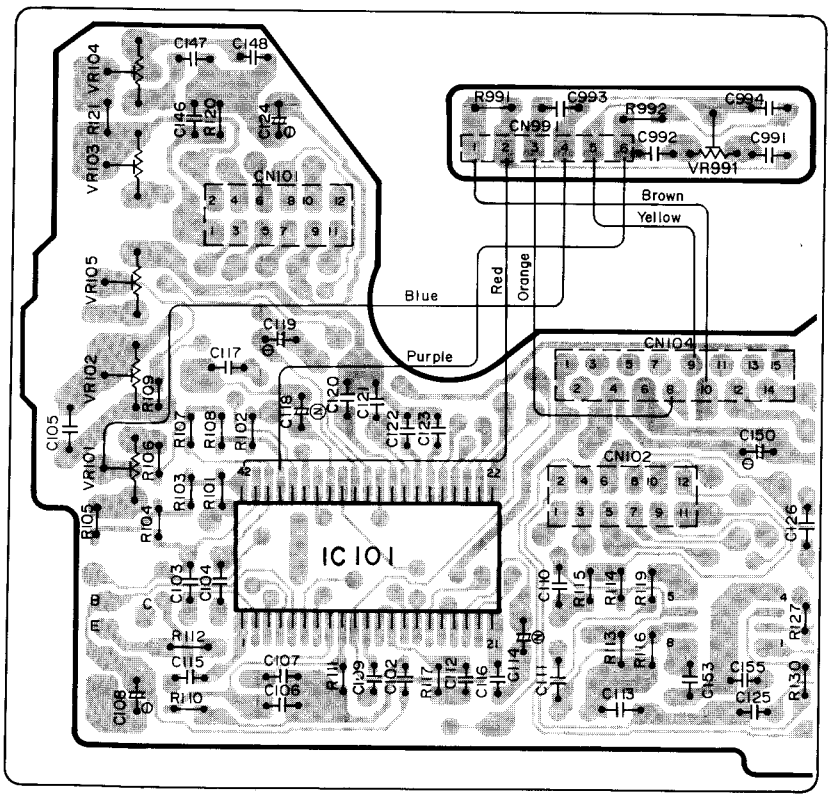
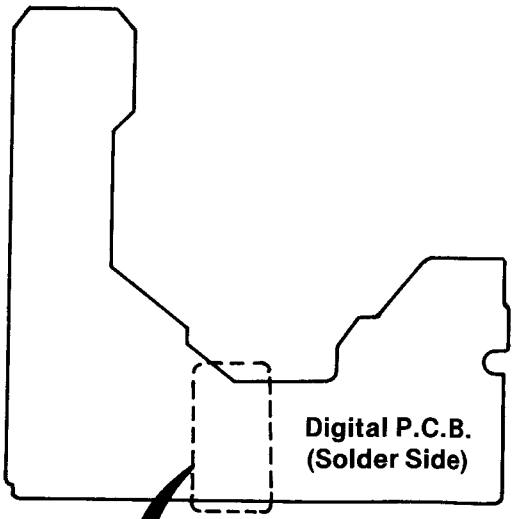


Addition of Capacitor (C321)



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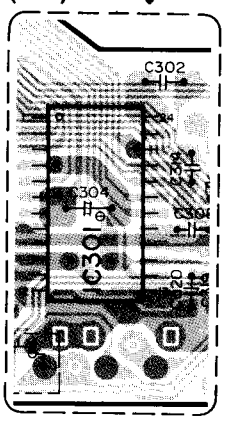

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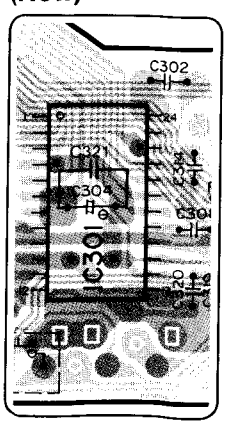

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ORDER NO. GAD8606187P8

Parts Change Notice

This is the Service Manual for the following areas.
[Z]... For all Euaropean areas except United Kingdom.
[E]... For United Kingdom.
[G]... For F.S.Germany.
[X]... For Asia, Latin America, Middle East and Africa Areas.
[L]... For Australia.
[ME]... For Aafes Euarope.
[MF]... For Aafes Pacific.

Model No. **RX–CD70**

(ORDER NO. GAD8601504A2
GAD8512558C3
GAD8602513A4)

Please revise the original parts list in the Service Manual to conform to the change(s) shown herein. If new part numbers are shown, be sure to use then ordering parts.

Reason for Change

*The circled item indicates the reason. If no marking, see the Notes in the bottom column.

1. Improve performance
2. Change of material or dimension
3. To meet approved specification
4. Standardization
5. Addition
6. Deletion
7. Correction
8. Other

Interchangeability Code

**The circled item Indicates the interchangeability. If no marking, see the Notes in the bottom column.

	Parts		Set Production	
A	Original	⤫	Early	Original or new parts may be used in early or late production set.
	New		Late	Use original parts until exhausted, then stock new parts.
B	Original	↗	Early	Original parts may be used in early production sets only. New parts may be used in early or late production sets. Use original parts where possible, then stock new parts.
	New		Late	
C	Original	↗	Early	New parts only may be used in early or late production sets.
	New		Late	Stock new parts.
D	Original	→	Early	Original parts may be used in early production sets only. New parts may be used in late production sets only. Stock both original and new parts.
	New	→	Late	
E	Other			

Part Number

Model No.	Ref. No.	Original Part No.	New Part No.	Notes	Part Name & Description	Price
	M20	RJGQ0001Z	RFM70Z	7	DC Motor Ass'y	

File this Parts Change Notice with your copy of the Service Manual.

National / Panasonic

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Matsushita Electric Trading Co., Ltd.
6th Floor, World Trade Center Bldg.,
No. 4-1, Hamamatsu-cho 2-Chome, Minato-ku,
Tokyo 105, Japan

Matsushita Erectric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

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